Vermont Early Literacy Initiative --
Science, Technology, Engineering & Mathematics
(VELI-STEM) Project

Year Three Evaluation Report:
Analysis of Librarian Post-Training Survey Data

May 2018

SURVEY OVERVIEW: On April 23 and 24, 2018, the VELI-STEM Year Three Librarian Training: STEM Inquiry – Sound and Light was held at Lake Morey, Vermont. In keeping with the process of annually administering a survey after each April training, an on-line survey link was distributed on the afternoon of the second day of the training to all librarians who attended the training (25 of the 26 VELI-STEM libraries in the current sample). The purpose of administering the post-training survey is to:

   a. Assess the effectiveness of the April training and shape future trainings;
   b. Measure changes in librarian proficiency in key constructs involved in the delivery of STEM programming to 3-7-year-old children, since a baseline measure was taken in February 2016;
   c. Inform future replication of the VELI-STEM project in Vermont and nationally.

The 2018 post-training survey measured almost identical constructs as those that were measured at baseline, as well as those that were measured after the April 2016 and 2017 trainings. Regular measurement of these constructs is designed to gauge progress toward and the final achievement of the following two intended project outcomes:

   1. Participating VELI-STEM librarians are better able to recognize opportunities to incorporate ongoing STEM learning experiences for 3-7-year-old children and their families throughout their library-based and community-based practice.
   2. Participating VELI-STEM librarians are more intentional in highlighting STEM literacy in Story Times and all other child and family focused programming.

All 25 librarians who attended the training responded to the survey, leading to the findings contained on the following pages. It should be noted that there was recent turnover at two libraries; so, for those librarians, this was their very first VELI-STEM training, which may have contributed to flat (versus continued gains in) scores on certain STEM knowledge, skill, concept, and delivery areas.

Kelly T. Myles, PhD

STEM Knowledge & Skills – Comparative Analysis					
Librarian self-assessment of their STEM knowledge and skill level on a *scale of 1-5	**Baseline (February 2016)**	**Year One: After the Two-Day Training (April 2016)**	**Year Two: After the Two-Day Training (April 2017)**	**Year Three: After the Two-Day Training (April 2018)**	**Change in Percentage Points from Baseline to Year Three**
Ability to identify opportunities to incorporate ongoing STEM learning experiences for 3-7-year-old children and their families	3.9	4.7	4.8	4.8	↑0.9
Ability to regularly provide opportunities for 3-7-year-old children to use basic science practices	3.1	4.6	4.8	4.6	↑1.6
Sense of the different settings in which STEM learning experiences can be provided	3.8	4.6	4.8	4.6	↑0.8
Access to/likeliness to use STEM training and other resources	3.4	4.8	4.9	4.9	↑1.5
Averages=	**3.6**	**4.7**	**4.8**	**4.7**	↑**1.1**
Ranges =	**3.1-3.9**	**4.6-4.8**	**4.8-4.9**	**4.6-4.9**	↑**0.8-1.6**

*Scale of 1-5, with 5 being fully proficient.

STEM Knowledge & Skills – Key Analysis High-lights

There has been a 1.1 percentage point increase in the level of STEM knowledge & skills since the project was launched:

- **Highest Score** – Like last year, the highest score of 4.9 was on the likelihood of using STEM training and other resources following the training. Compared to a 3.4 at baseline, this year's score represents an increase of 1.5 percentage points or a 44% rate of improvement in that area since the project was launched.
- **Lowest Score** – Scores were high across the board, with two of the four STEM knowledge and skill areas receiving the "lowest" score of 4.6 (ability to regularly provide STEM learning opportunities for 3-7-year-old children & having a sense of the different settings in which STEM learning experiences can be provided).
- **Biggest Gain** – The biggest gain since the project was launched was 1.6 percentage points on the ability to regularly provide STEM learning opportunities for 3-7-year-old children, which had the lowest baseline score (greatest amount of room for improvement).
- **Smallest Gain** – The smallest gain since the project was launched was just under a percentage point (0.8) on having a sense of the different settings in which STEM learning experiences can be provided, which already had a strong baseline score (limited room for improvement).

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STEM Concepts & Delivery – Comparative Analysis					
Librarian self-assessment of their understanding of STEM concepts and delivery on a **scale of 1-5	**Baseline** (February 2016)	**Year One: After the Two-Day Training** (April 2016)	**Year Two: After the Two-Day Training** (April 2017)	**Year Three: After the Two-Day Training** (April 2018)	**Change in Percentage Points from Baseline to Year Three**
STEM inquiry	N/A (not measured at baseline)	4.5	4.6	4.6	N/A
STEM Force and Motion concepts	3.6	4.7	N/A (not measured in Year Two)	N/A (not measured In Year Three)	N/A
STEM Building and Engineering concepts	N/A (not measured at baseline)	N/A (not measured In Year One)	4.8	N/A (not measured In Year Three)	N/A
STEM Sound and Light concepts	3.2	N/A (not measured In Year One)	N/A (not measured in Year Two)	4.6	N/A
What it means to engage children in science-learning opportunities within a context of science engineering practices	3.5	4.5	4.8	4.7	↑1.2
How to encourage children to develop and use a range of science practices as described in the Next Generation Science Standards	2.3	3.9	4.1	4.2	↑1.9
How to transfer acquired STEM knowledge and skills to early childhood educators in library's community	3.0	4.2	4.5	4.4	↑1.4
How to conduct STEM outreach and informational exchanges with library's community	2.9	4.3	4.4	4.4	↑1.5
Averages =	**3.2**	**4.3**	**4.5**	**4.5**	**↑1.3**
Ranges =	**2.3-3.7**	**3.9-4.7**	**4.1-4.8**	**4.2-4.7**	**↑1.2-1.9**

**Scale of 1 to 5, with 5 indicating that they strongly agree that they *have* an understanding (baseline) or a *better* understanding (post-training).

STEM Concepts & Delivery – Key Analysis High-lights

There has been a 1.3 percentage point increase in the level of understanding of STEM concepts & delivery since the project was launched:

- **Highest Score/Smallest Gain** – The highest score of 4.7 was on what it means to engage children in science-learning opportunities within a context of science engineering practices, but the 1.2 percentage point increase in that area was the smallest gain among all STEM concept & delivery areas, although that still represents a 34% rate of improvement since the baseline score of 3.5 (there was only moderate room for improvement).
- **Lowest Score/Biggest Gain** – While encouraging children to develop and use a range of science practices as described in the Next Generation Science continues to generate the lowest score at 4.2 (and generated some anecdotal feedback about limited understanding), the 1.9 percentage point gain represents the largest gain for any STEM concept & delivery area, indicating that training has been effective for many of the librarians.

In Their Own Words

The last field of the survey offered librarians an optional opportunity to provide open-ended comments, observations, and suggestions about the April 2018 two-day training on STEM Inquiry – Sound and Light, with 21 (84%) of the 25 survey respondents offering feedback. Consistent with February 2016 baseline and April 2016 and 2017 post-training surveys, the most frequently shared comments on the April 2018 post-training survey conveyed praise and appreciation for the project. Unlike prior years, a number of comments focused on continuing the project beyond the current three-year Institute of Museum and Library Services grant's expiration on October 31, 2018 :

Key Themes	TOTALS
Praise for training	19
Value of the trainings	12
Value of materials distributed at training	11
Gratitude for involvement in the VELI-STEM project	10
Suggestions for future trainings	6
Presenters – quality and issues	6
Continuing the project past 3-year grant period	5
Miscellaneous comments	4
Sound and light as good theme (and ties in well with Summer Reading Program)	2

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Q6 Other comments, observations, suggestions about the two-day VELI-STEM training:

Tools In-depth Concepts Content Fun Reporting
Confident Young Children Activities
Worthwhile Training Books Second Day
Opportunity Year 3 Sound and Light
Summer Reading Program Books and Materials
Quality
Prepared Group Explore Books

A complete list of all individual comments (de-identified) was provided to the VELI-STEM project leadership team and is available upon request. A few samples comments related to this year's new theme (continuing the project past the 3-year grant period) are shared here:

➢ I would love for this program to continue. One of the big draws of this program for parents and libraries is the high-quality books and materials. I have the knowledge after three years of training, but I don't have the "carrot" of FREE STUFF to get them in here or replenish my own supplies. I believe we could continue the childcare provider piece without books and materials because they get free credits, but the family piece will suffer. It has been so valuable in my community. I would like to see this program extended out into Vermont. Perhaps through Continuing Education, sessions at VLA or other conferences. I would be willing to help educate fellow librarians.

➢ I am sad this is our last year of these trainings! Hopefully there will be another type of program/grant like this from the DOL so we can continue to learn, receive training and get materials our libraries really need!

➢ I would love to see other libraries be able to learn about this program and bring it to their towns. I would also appreciate the ability to continue learning more from STEM programs to provide the learning opportunities to children in [my] area.

➢ Why change what is working so successfully?