



**An Evaluation of “Curating Digital Museum Content  
with Visible Thinking Routines”**

*A Training Conducted by the Smithsonian Center for Learning and  
Digital Access*

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**Volume I: Main Report**

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## *Background of the Evaluation*

In November 2017 the Smithsonian Center for Learning and Digital Access (SCLDA) received a grant from the Grable Foundation to implement a collaborative professional development program for teachers, “Curating Digital Museum Content with Visible Thinking Routines.” The program aimed to help teachers better integrate digital resources into the classroom by providing instruction on how to use Smithsonian resources with the Harvard Project Zero Thinking Routines as a teaching strategy. The program was also designed to create a community in which educators could share examples of how they have implemented these changes in their curriculum. To this end, SCLDA worked with leadership at the district level from nine participating districts in the region to establish school-site teams that would collaborate on using digital resources and Thinking Routines in the classroom.

In its grant proposal, SCLDA outlined an evaluation to assess:

- 1) The effectiveness of applying Harvard Project Zero Thinking Routines to the use of digital resources – specifically, collections of digital resources from the Smithsonian created by participants for use in the classroom
- 2) The effectiveness of this teaching strategy, as evidenced by its use in the classroom and effect on student engagement and learning
- 3) The extent to which the professional development increased teachers’ knowledge of and confidence in
  - a. Creating digital collections
  - b. Applying the Thinking Routines to digital collections
  - c. Implementing this approach in the classroom
- 4) The process teachers followed in making decisions about curating museum resources and their intentionality for classroom instruction
- 5) The quality of the workshop trainings and how they can be improved.

SCLDA implemented the program during the period August 2018 to May 2019. Participants consisted of 5 Quaker Valley, PA, Smithsonian Teacher-Fellows who participated in a two-week workshop, and 27 Allegheny County, PA, elementary school teachers who participated in a series of four workshops.

SCLDA hired Smithsonian Organization and Audience Research (SOAR)<sup>1</sup> to conduct the evaluation of the Teacher-Fellows and teacher workshop elements of “Curating Digital Museum Content with Visible Thinking Routines.”

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<sup>1</sup> SOAR is central organizational effectiveness and audience research office at the Smithsonian whose work includes independent program evaluations.



## Methodology

There were several elements to the evaluation:

- *Teacher-Fellows.* The SCLDA project team obtained feedback on the program through interviews with the five Teacher-Fellows.
- *Teachers participating in the workshops.* The project team asked attendees at the first workshop to complete a pre-survey (one person who signed up late did not take it). A post-workshop survey was administered after each of the four workshops. Not all teachers who signed up for the program attended all four workshops – only six did so, and not all participants at a workshop chose to take the survey<sup>2</sup>. (See Appendix A of the second volume for the survey questionnaires.) The post-Workshop 4 survey included questions that paralleled those in the pre-survey to permit before-and-after comparisons. It also asked for teachers’ reflections on the quality of the workshop. The response rates for the pre- and post-surveys are shown in the table below. Ten of the teachers who attended Workshop 4 were also interviewed to get more in-depth information about their experiences with the workshop and their resulting professional development.<sup>3</sup>

### Survey Participation

	Percent Responding	Count	Workshop Participants
Workshop Pre-Survey	67%	18	27 (all)
Workshop 1 Post-survey	100%	19	19
Workshop 2 Post-survey	76%	19	25
Workshop 3 Post-survey	90%	19	21
Workshop 4 Post-survey	75%	12	16

Some points about the survey need to be made. Although the post-survey for Workshops 1, 2, and 3 each received 19 responses, they were not by the same 19 participants. Eleven of twenty-seven teachers participated in all four workshops, but only six responded to all five surveys. Only nine participants completed both the pre- and post-survey for Workshop 4. Because of this variability and the low percentage of teachers completing the surveys, SOAR is unable to generalize the survey findings to either the entire cohort of teachers who participated in the program or to a larger population of teachers. (Additional analyses using only the six workshop participants who attended all four workshops and

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<sup>2</sup> Federal regulations for human subject research require voluntary participation in surveys for this type of project evaluation.

<sup>3</sup> The interview questions did not parallel all the questions in the surveys. Where there was a common question, a summary of the related interview comments from both the Teacher-Fellows and the teachers at the workshop are included at that point in the report. Note that the interviews provide only anecdotal information and are not generalizable to the full cohort of teachers at the workshops or to teachers more broadly.

responded to all five surveys are included as Appendix A in Volume II, Appendices. The analyses are of interest, but the results are more tenuous because of the issues with the data described above, and the small number of respondents. SOAR therefore chose not to include them in the main report.) Also in Volume II are the interview guides (C), Pre-Survey Frequencies (D), and Workshop 4, Post-Survey Frequencies (E).

An additional issue with the responses to the surveys must be noted. One participant selected *Strongly Disagree* for every statement in the Workshop 3 survey. There is reason to believe this was a mistake because that participant did not give any negative feedback in the open-ended section of the survey and had selected *Strongly Agree* for every statement in the survey for another workshop. This participant's responses are included here, but it should be noted that this person's answers have an outsize downward effect on the percentage of participants providing positive results because the sample of respondents is so small.

## *Conclusions: Outcomes of “Curating Digital Museum Content with Visible Thinking Routines”*

This section of the report on “Curating Digital Museum Content with Visible Thinking Routines” provides SOAR’s conclusions about the effectiveness of the program in terms of achieving its intended outcomes. It also presents SOAR’s thoughts on follow-up actions to address some areas that program participants identified as needing improvement.

It is important to note that a number of factors about the data (see the Methodology section) limited the analysis that could be carried out and precluded generalizing the results beyond the survey respondents. In addition, as this program is unique, there are no benchmarks against which to measure the program results. That said, there is consistency in the themes that emerge from the survey data and the interviews with the Teacher-Fellows and teachers at the workshops. SOAR believes the findings are robust enough to serve as a foundation for continued development and testing of the program.

### **Overall Conclusion**

Based on the results of the evaluation surveys and interviews, “Curating Digital Museum Content with Visible Thinking Routines” was a positive and impactful professional development experience for the Teacher-Fellows and most of the teachers who attended the workshops. Key indicators for that conclusion are:

- The high percentage of teachers at the workshops who chose *Strongly Agree* and *Agree* for most of the statements related to intended outcomes. The increase in those responses between the first and last workshop shows an overall growth in skills, knowledge, and practice for most of the teachers. Only a very small number chose *Uncertain, Disagree, or Strongly Disagree*, and there were very few negative comments in the post-Workshop 4 responses to the open-ended questions or in the interviews.
- The number of teachers who created digital resource collections and used them effectively in the classroom over the course of the program.
- The added value to their teaching and to student learning and engagement in many critical ways that the Teacher-Fellows and teachers at the workshops described in their interviews.
- Statements by participants that they see enough value in using digital resources with the Thinking Routines to continue using this teaching strategy.

## Professional Development Outcomes

### ***Gaining Usable Skills***

There was a considerable increase in the number of teachers at the workshop who *Strongly Agreed* that they gained usable skills for creating digital resource collections, working with the Learning Lab, using digital resources with the Thinking Routines, and putting the skills into practice in the classroom. The growth in *Strongly Agreed* responses mainly came from a shift in teacher responses from *Agreed* to *Strongly Agreed*. In the interviews the Teacher-Fellows and teachers in the workshops provided evidence that they were successfully using digital resources with the Thinking Routines in the classroom.

The survey data did show a continuing lack of comfort with using digital resources and the Thinking Routines in the classroom. The self-reported evidence of success using the strategy in the classroom appears to contradict the survey data. It may be that even though the teachers are effectively using the strategy in the classroom, not all had accepted that they had the capability to so.

It would be useful to do a follow-up survey or interviews with the teachers at the end of the 2019-20 academic year to see the extent to which the teachers followed through on their intent to continue using the strategy; their level of comfort with it; the gains they see in their teaching performance and students' learning and engagement; what factors contribute to successful use of the strategy; and what, with the benefit of hindsight, they would like the workshops to have covered.

### ***Using the Smithsonian Learning Lab***

Nearly all survey respondents *Agreed* or *Strongly Agreed*, particularly by the 3<sup>rd</sup> workshop, that the workshops helped them use the Learning Lab. The uncertainty voiced in the first two workshops had mostly disappeared by Workshop 3. By Workshop 4, around two-thirds of the participants had gained experience and become more comfortable with the Learning Lab. Many commented on the user-friendly interface and the ease of adding materials to their collections, a contrast to the post-Workshop 1 comments that exploring the Smithsonian's digital resources and doing so through the Learning Lab were very challenging.

### ***Creating Collections***

Similarly, by Workshop 4 there was a high level of agreement that the workshops had helped participants create collections. Most teachers cited a specific reason for their selections, although they did not use the term "learning objective." Getting more information on the basis and process for making collections decisions may help SCLDA develop different or improved tools tailored to teachers' intended uses of the collections, which included:

- Complementing a unit being covered in the curriculum

- Finding a way to use an inspiring object
- Finding digital resources that are likely to generate student questions and discussion
- Encouraging students to engage in a particular style of thinking
- Supporting the goals of an activity such as getting students to investigate an object in detail
- Starting investigations and inspiring research.

A common theme in the survey data and interviews was that finding the right resources from SI collections, even when working through Learning Lab, was overly challenging, particularly in the early stages. The main issue was the search function, which produced thousands of resources that both the Teacher-Fellows and teachers at the workshops had difficulty narrowing down to what they needed. Over time, the difficulty diminished as they found ways to conduct better searches, became more familiar with the process, and learned from one another. Still, in the interviews, participants emphasized their desire to have more instruction, guidance, tips, examples of what their peers have done, pre-made collections to work with, and other tools and information to facilitate making collections.

When the Teacher-Fellows and workshop participants talked about other content providers they use and what they liked about them, the top characteristics were ease of use and accessibility, along with a wide variety of resources, authenticity, and accuracy. Participants saw the Learning Lab and the Smithsonian more generally as at the forefront of providers for the last two criteria, and praised the Smithsonian for the amount and variety of its digital resources (while acknowledging that it is hard to beat Google). They also appreciated the extent to which the Learning Lab is youth- and parent-friendly and a safe source of content compared to the other content providers such as Google. Nevertheless, the sense is that teachers turn first to content providers that are easy to use and accessible.

Given the difficulty that both the Teacher-Fellows and the teachers had finding the digital resources they needed, SOAR wonders about the likelihood that educators and students working on their own will make the Learning Lab their first choice and be willing to stick with a challenging search. SOAR understands that SCLDA has no ability to address some of the issues with the search function. It believes, however, that there are steps SCLDA can take to make the Learning Lab more user-friendly and accessible. Doing so will also support scaling up this professional development program and make it more competitive with other content providers, particularly for those teachers and students who are working on their own in a school or home setting.

A key step is to provide more guides, tips, instructions, pre-made collections, solutions that users have developed themselves, perhaps even a chat function, to facilitate the search for and creation of collections. The Teacher-Fellows and teacher interviewees provided a number of solutions and suggestions that can serve as a starting point. SOAR thinks it might be useful for SCLDA to conduct some follow-up targeted

interviews with program participants to gain more in-depth understanding of how they try and want to use the Learning Lab to access resources.

Following are some of the tools and support materials the Teacher-Fellows and teachers at the workshop said they want:

- A model collection that is customizable by both teachers and students to permit adapting collections fit different needs, teaching methods, and learning levels (one person used the term “leveled content”). This also would contribute to the goal of moving students to work independently.
- An easy path to creating collections that teachers can use immediately and easily in the classroom; even younger students should be able to use the Learning Lab with minimum difficulty.
- Templates that offer a structure that can easily be applied in the classroom and include highly engaging content, as well as different suggestions for presenting the collections, like the Thinking Routines or a “step-by-step lesson plan.”
- Digital resources that are unique, i.e., not normally available in a classroom.
- More background information on artifacts related to their history or culture and other background context.
- Access to solutions their peers have developed.

The Teacher-Fellows also provided suggestions for model learning experiences (although they did not use the term “model”):

- A starting point that inspires curiosity and engagement, in part through relevance to the real world.
- A way to assess students’ knowledge of a topic to help teachers prepare lessons.
- An experience that is interactive, engaging, and hands-on.
- A path to greater student independence in carrying out assignments and developing and understanding subject matter.
- A way to assess student learning.

A final point is that a few program participants commented they were unable to find digital resources for certain subject matter like math. SOAR cannot say whether this experience is widespread or if the scarcity of such materials is real. Given the emphasis on STEM in general and at the Smithsonian in particular, it may be something to follow up on.

A further takeaway in terms of facilitating use of the Learning Lab is the importance of practice. It seems clear that the sequence of four workshops, spaced so as to allow time to apply the learning in the

classroom, enabled teachers to revisit, solidify, and expand on the learning from the previous workshops. The opportunity to learn from the experiences of peers was also an important. The challenge is to find a way to offer that support outside of a series of workshops, which is not feasible on a large scale. A library of videos, a site for sharing curricula or model collection experiences, or support for periodic conference calls with teachers to permit dialogue, sharing, and problem-solving with peers and SCLDA experts might be worth exploring.

### ***Understanding and Using Project Zero Thinking Routines in the Classroom***

Over the course of the four workshops, there was a marked increase in the comfort teachers felt using the Thinking Routines and using digital resources with the Thinking Routines, both of which were goals of the grant. The teachers' post-Workshop 4 reflections indicated very positive classroom experiences overall. Teachers identified specific activities or tools from the Thinking Routines that they used: See/Think/Wonder, "What makes you say that," Claim/Support/Question, using art to introduce a subject, making collections, and the deck of cards activity in Workshop 3. There was also growth, though more mixed, in improved understanding of the Thinking Routines. At the same time, as noted earlier, the comfort that teachers felt was lower than that for other aspects of the training.

The Teacher-Fellows described an overwhelmingly positive experience using collections in the classroom and believed the Learning Lab greatly enhanced their access to and ability to engage with very high-quality digital resources. These participants, who had more in-depth exposure to using digital collections with the Thinking Routines, commented on the ease of using the latter and connecting to resources for students as well as themselves.

When it came to integrating digital resources into classroom practice, the level of agreement with feeling comfortable doing so was not as high for the teachers in the workshops as it was with other skills. The same was true for using digital resources with the Thinking Routines – it was one of the few instances in which the percentage fell below 50% *Strongly Agree*, and there was persistent *Uncertainty* for two teachers. Again, it is not clear whether use of the strategy is still new enough that even when applied effectively, teachers were still feeling their way along. Again, follow-up with the participants might clarify this point and let SCLDA know if there is some action they need to take to enhance these skills.

An additional challenge teachers noted was knowing how to connect their collections to their curricula. Two strategies emerged during the program, based on whether the teacher's goal is to create collections for specific lesson plans or to inspire new lessons plans. The starting point is to be clear about what the collection was to be used for and then to tailor the search on that basis:

- To create collections for specific lesson plans, e.g., supplemental materials: narrow the search either to a topic or type of resource.

- To create collections to inspire new lesson plans: search on more general themes and pull in items that might be of interest during the school year.

Other tools specifically tied to classroom use that the teachers suggested are:

- Examples of assignments/projects, with the ability to customize.
- A structured walk-through of how to create assignments.
- Content linked to educational standards and to instruction, at a pace that affords time for deep thinking and exploration.
- Ways for students to share and collaborate.
- Better collaboration among teachers, particularly within similar grades and the same school.

### ***Becoming a Better Teacher***

There was a very significant increase between Workshops 1 and 3 in the percentage of *Strongly Agree* responses to the statement that the workshops helped participants become better teachers. This is evidence of a positive professional development impact. Here again, however, there was persistent *Uncertainty* for two teachers.

When asked what value using digital resources with the Thinking Routines added to their teaching, participants provided a number of examples. The Teacher-Fellows noted, for example, that:

- The Learning Lab gave them a new perspective by leading them to re-evaluate how they structured their lessons and what resources they used. They spent more time reflecting on the student learning experience and how best to make it exceptional.
- Using digital resources with the Thinking Routines greatly enhanced their ability to engage students with very high-quality digital resources and encourage students to investigate the artifacts closely and to ask questions. Both these results led to deeper thinking.
- The Thinking Routines strategy naturally led students to ask questions that could be answered by another artifact and that facilitated linking the different ideas of a lesson. The artifacts helped students relate to the past and understand the people who came before.
- Using the Thinking Routines helped teach students the skills needed to investigate digital resources on their own and led to increased student autonomy.
- Using digital resources was a way to provide context or introduce new units.
- Their collections connected easily to lessons in the classroom.
- Using the Thinking Routines with their collections created a common language and set high standards.



The comments of the teachers at the workshops paralleled these themes. One person raised an additional point – access to so many resources encouraged the teachers to think outside the box and be more creative with their material.

When asked what they would do differently the next time, the majority of teachers would allocate more time for the activities. Their sense was that the activities were more successful with repetition or that the collections just took longer for students to grasp than expected. A few teachers wanted to grow their collection and include more resources. These comments indicate that the teachers see museum digital resources with the Thinking Routines as a valuable approach and worth continued use.

### *The Value of the Strategy for Students*

Both the Teacher-Fellows and the teachers in the workshops were impressed by the success their collections had in the classroom, particularly with respect to greater engagement by students, increased participation, and a higher level of thinking and learning. The teachers liked that the collection served as a tool to guide students toward the intended learning without too much prompting, giving students more independence.

The students welcomed the change in pace and the break in routine, both of which contributed to improved learning. The use of digital resources with the Thinking Routines had the valuable effect of helping both students and teachers slow down. The collections and teaching techniques that accompany them led students to spend more time thinking rather than focusing solely on the final project or test material.

The teachers also noted how the Learning Lab provided global exposure to a variety of places and things that students may never have seen in person. For some teachers, this outcome was one of the most important and rewarding parts of teaching. An interesting comment from one workshop participant was that using digital resources with the Thinking Routines created a universal language that made their ESL (English as a second language) kids feel comfortable. Another person said that the approach leveled the playing field by making it made easier for all students to participate in discussions.

The Teacher-Fellows' comments paralleled those of the teachers for the most part: increased student autonomy, inspiration for future learning, more questions from students, and more freedom to explore and find answers on their own. Another key point was the importance of students having access to a wide variety of artifacts with which to interact online and study closely. They thought the Learning Lab peaked students' curiosity and improved their ability to make connections and think more deeply. The resources helped students visualize the past and connect with historical people and events. The greater autonomy allowed students to discuss and learn from each other.

A related point is the Learning Lab's ability to provide general exposure to digital resources, which, combined with its accessibility, helps make the content available at all learning levels. For example, the images and paintings available from the Learning Lab provided valuable context that allowed students to better visualize history. The effect is to support the students' overall learning inside and outside the classroom.

One caveat about the effect on students was noted – some teachers believed the strategy of using digital resources with the Thinking Routines was not as effective with students who didn't have adequate background information or lacked prior exposure to online collections. If there are many students in this situation, it might be worth exploring how to better engage with these students so that they also have the benefits of the strategy. However, another teacher disagreed, claiming that Thinking Routines allow all students to participate because you don't need background knowledge to describe what you see or to ask questions about an artifact.

### ***Collaboration***

Program participants found value in learning and problem-solving with their peers and with Smithsonian experts. One improvement they suggested is more opportunities for collaboration. Although teachers were less certain in the survey if collaboration helped them specifically use the Learning Lab or create collections, collaboration was often cited as the most valuable part of the workshops in the open-ended section of the survey. It was not always clear whether respondents were referencing collaboration in the workshop itself (with fellow workshop participants or Teacher-Fellows) or collaboration with the school-site collaboration.

SCLDA had worked with the school districts ahead of the program to set up school-site teams of teachers to provide implementation support and collaboration opportunities with peers. Participants questioned the effectiveness of the teams and gave them less positive feedback than for other aspects of the program. However, they did not provide much detail on why that was the case. SCLDA believes part of the problem is that the districts created teams that sometimes had teachers from different schools or different grades. It noted that in other of its projects, the greatest collaboration happened among teachers from similar grade levels. This issue also emerged in interviewees' comments.

In future iterations of this professional development, it may be useful for the facilitators to set clearer guidelines for the ideal composition of the teacher teams. However, this is another area where follow-up interviews might be worthwhile to ensure that there aren't other reasons for the lukewarm response to the school-site teams, such as teachers not being able to make the time available for meeting and a lack of support from the school administration.

### ***Future Use of Museum Digital Resources with Project Zero Thinking Routines***

Overall, teachers expressed a strong interest in continuing to use what they learned in the workshops. Many planned to use museum digital resources with the Thinking Routines to actively engage students

because the resources helped students synthesize information, examine artifacts, and make discussions more relevant. This teaching strategy was seen as a good supplement to the general learning.

## Quality of the Workshops

Almost all participants were positive about the workshops themselves, with almost everyone either *Strongly Agreeing* or *Agreeing* with the statements about quality. There was, however, an unexplained dip between Workshop 3 and 4 in the number of people *Strongly Agreeing* that the workshop was well-organized and that the exposition of the main points was clear. One factor in this result could be that six fewer people attended Workshop 4. On the other hand, participants lauded the facilitation in general, with, for example, 92% of teachers *Strongly Agreeing* that the facilitators demonstrated comprehensive knowledge of the subject matter.

### ***Most Valuable Aspects***

The aspects of the workshops that participants found most valuable were fairly consistent across the workshops:

- Seeing specific examples of how to use the Thinking Routines.
- Using the digital resources, online collections, and other techniques in their classroom.
- The hands-on experience of creating collections and using the Smithsonian Learning Lab.
- Learning about the Thinking Routines.
- The access to new resources and learning how to use them.
- The See/Think/Wonder activity, which got several mentions.
- From the second workshop on, collaboration with colleagues emerged as valuable, particularly hearing how other educators used the Thinking Routines in their classrooms and sharing ideas.

At the end of Workshop 4, the Thinking Routines emerged as the most valuable aspect, with teachers describing it as a versatile learning strategy that could be applied to many different subjects and materials. The quality of the facilitation and presentations by the Teacher-Fellows were also noted. Last, the teachers described professional development as important and impactful overall.

### ***Least Valuable Aspects***

There were few responses to the question about the least valuable aspects. One was the tour of the Children's Museum. SCLDA wondered if, in the case of some activities described as "least valuable," the reason might have been that the connection between what the teachers experienced and the classroom was lacking. In other SCLDA workshops, it seemed participants got more out of an activity when the

facilitators demonstrated how the ideas they just covered could be transferred to the classroom through the Smithsonian Learning Lab.

### ***Suggested Improvements***

As to how the workshops could be improved, the responses were again limited. A variety of things came up. A number of teachers referenced getting more help with processes and content – more explanation, more specific instruction, more practice, more time and help navigating the Smithsonian Learning Lab and creating collections, more examples of the Thinking Routines, and more examples of how to integrate digital resources and the Thinking Routines into the classroom. A desire for more collaboration between teachers in the same grade level / content area was mentioned, along with content delivery – the pace was too slow, too much time was spent on collaboration, and not enough time was available for the Learning Lab.

## Findings

### About the Participants

#### *Demographics*

The demographics of workshop participants varied in terms of school job, years teaching, experience with and use of digital resources, especially creating digital collections, and use of the Thinking Routines. Two-thirds had been teaching between 7 and 20 years. Slightly more than half were engaged with 4<sup>th</sup> and 5<sup>th</sup> grades. At least 13 of 27 had education-related Master's degrees. At least 72% had had some professional development on the use of digital resources, while around 80% had had related course work.

The cohort of teachers self-reported as having at least some to a great deal of experience with digital lessons or the use of digital resources in the classroom in the past year. In contrast, most had no or fairly limited experience or familiarity with the Harvard Project Zero Thinking Routines.

Teachers rated themselves as having a fair level of comfort using digital resources and teaching strategies in the classroom. There was somewhat less comfort with using different technologies and developing lessons using online resources. The frequency with which teachers engaged in the practices and with technology varied. The largest number selected *Monthly* for the statement "I engage in professional development to enhance my content knowledge" (72%). The majority selected *Weekly* for three statements: "I use primary sources that I have found online," "I use lessons that I have found online," and "I use media such as videos in the classroom" (61%, 56%, and 56% respectively). The percentages of teachers choosing *Never* for three statements – "Students view museum exhibitions (online or in person) to develop their content knowledge," "I use artifacts from museums that I have found online," and "Students in my class use technological tools and resources to learn content" – were 39%, 17%, and 11% respectively.

(See the tables below.)

**Years Teaching**

	Percent	Count
1-3 years	4%	1
4-6 years	11%	3
7-10 years	30%	8
11-20 years	37%	10
21 years or more	19%	5
Total	100%	27

**Bachelor Major**

	Percent	Count
Developmental Psychology	4%	1
Art Education	4%	1
BS	4%	1
Communication Science/Elementary Education	4%	1
Education	4%	1
Education of Exceptional Children	4%	1
Elementary Education	37%	10
Elementary K-6 and Special Education N-12	4%	1
Fine Arts	4%	1
Health and Physical Education	4%	1
History	4%	1
Humanities	4%	1
Political Science	4%	1
Psychology	7%	2
Special Education	7%	2
Other	4%	1
Total	100%	27

**Grades Taught**

	Percent	Count
Kindergarten	4%	1
1 <sup>st</sup>	4%	1
2 <sup>nd</sup>	7%	2
3 <sup>rd</sup>	7%	2
4 <sup>th</sup>	19%	5
4 <sup>th</sup> and 5 <sup>th</sup>	4%	1
5 <sup>th</sup>	33%	9
6 <sup>th</sup>	4%	1
Kindergarten through 6 <sup>th</sup> grade	4%	1
All elementary grades	7%	2
Unknown	7%	2
Total	100%	27

**Master Major**

	Percent	Count
Curriculum / Instruction	7%	2
Education	11%	3
Educational Administration	4%	1
Elementary Education	11%	3
Elementary Math and Science	4%	1
Exercise Physiology & Educational Leadership	4%	1
Master of Arts in Teaching	4%	1
Master of Education with Reading Specialist	4%	1
Public Management in Ed. Leadership	4%	1
Special Education	11%	3
Unknown	37%	10
Total	100%	27

### ***Experience with Digital Resources and Project Zero Thinking Routines***

The pre-survey asked a series of questions regarding participants' experience with digital resources and the Thinking Routines. The majority had had some professional development related to the use of digital resources and some coursework related to the use of digital resources during undergraduate or graduate school (78% and 83%, respectively). Many participants had used digital lessons or resources in the classroom over 40 times (44% compared to 6% who had never done so).

#### **Hours of Professional Development on the Use of Digital Resources**

	Percent	Count
None	22%	4
1-8 Hours	50%	9
9-16 Hours	11%	2
12-24 Hours	11%	2
Unknown	6%	1
Total	100%	18

#### **Courses Taken on the Use of Digital Resources (participants selected all that applied)**

	Percent	Count
The subject of one or more courses	39%	7
Integrated into one or more courses	33%	6
Partially covered in one or more courses	44%	8
Not covered	17%	3
Total	100%	18

#### **Number of Times Digital Lessons or Resources Used in the Classroom in the Past Year**

	Percent	Count
Never	6%	1
1-10 times	28%	5
31-20 times	6%	1
21-40 times	17%	3
Over 40 times	44%	8
Total	100%	18

The majority of teachers had had no professional development on the Project Zero Thinking Routines (89%). On a scale of 1 to 7, two in three participants ranked their familiarity with Project Zero Thinking Routines at 2 or below (66%).

**Hours of Professional Development on Project Zero Thinking Routines**

	Percent	Count
0	89%	16
1-8 hours	11%	2
Total	100%	18

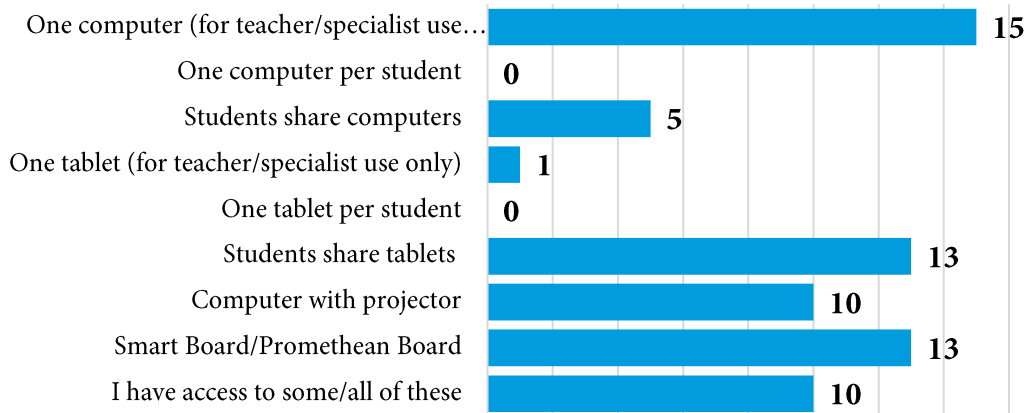
**Familiarity with Project Zero Thinking Routines on a Scale of 1 to 7**

	Percent	Count
0	11%	2
1	44%	8
2	11%	2
3	6%	1
4	6%	1
5	0%	0
6	0%	0
7	6%	1
Unknown	17%	3
Total	100%	18

Last, teachers were asked about the technology resources available to them and their classrooms. The majority had one computer for teacher/specialist use only (83%). Three in four had tablets for students to share and/or a Smartboard or Promethean Board (72%). Over half had a computer with a projector (56%). None had designated computers or tablets for each student.



## Classroom Resources



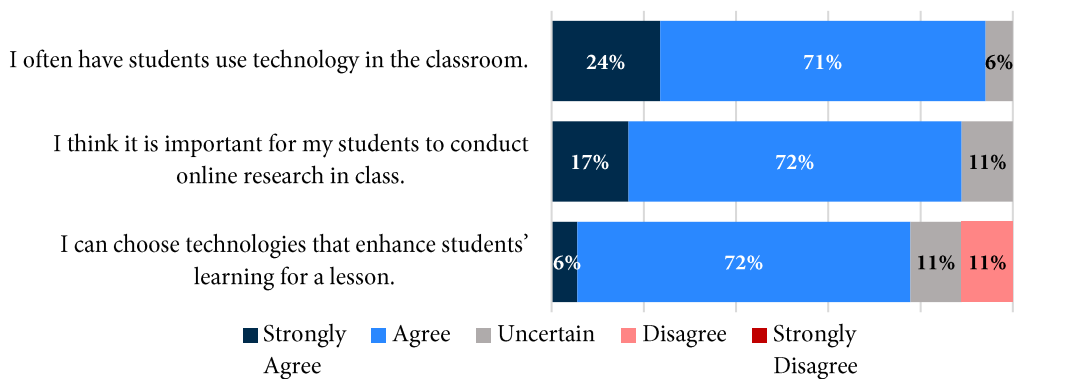
## Pre-Program Perceptions and Practices

### *Comfort Using Digital Resources and Teaching Strategies*

The pre-survey asked participants to rate their level of agreement with 14 statements by selecting *Strongly Agree*, *Agree*, *Uncertain*, *Disagree*, or *Strongly Disagree*. The statements addressed comfort with a variety of skills taught throughout the workshops, techniques participants used in the classroom, and perceptions of the role of technology in education.<sup>4</sup>

Although most teachers agreed that there is a benefit to students using technology in the classroom, very few *Strongly Agreed*. Two teachers *Strongly Disagreed* that they could choose technology to improve classroom learning.

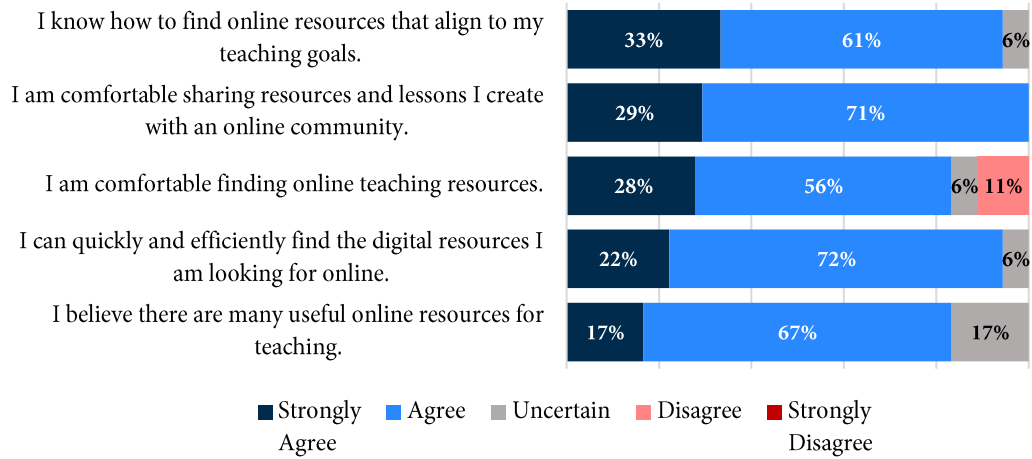
### Students Using Technology



<sup>4</sup> It should be noted that with an elementary school cohort, there is great variation between, for example, a Kindergartener and a 6th grader in what is developmentally appropriate and feasible on a daily basis in terms of independent research online or analysis of primary sources.

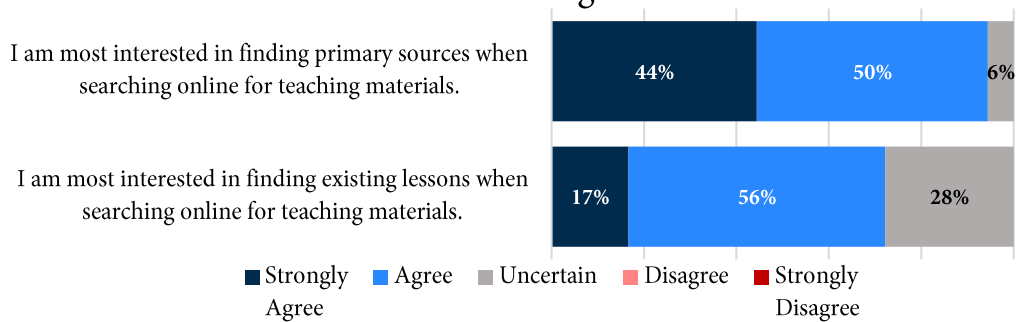
The majority of teachers were comfortable finding online resources, although fewer believed these online resources were useful. Two teachers did not feel comfortable sharing resources with an online community.

### Online Resources



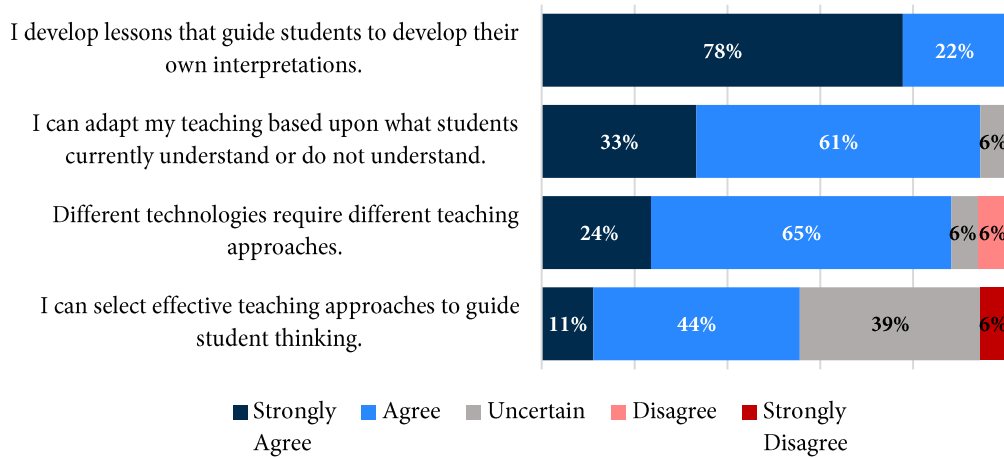
More teachers were more interested in finding primary sources than finding existing lessons when searching for teaching resources online.

### Online Teaching Materials



Most teachers were confident in their ability to create lesson plans that encouraged student thinking, but were less confident in choosing teaching approaches to achieve the same goal.

### Teaching Strategies

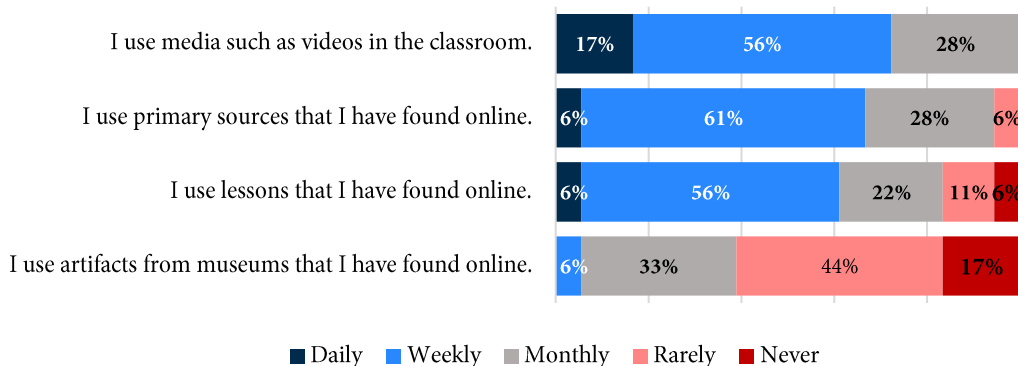


### Frequency of Using Digital Resources and Teaching Strategies

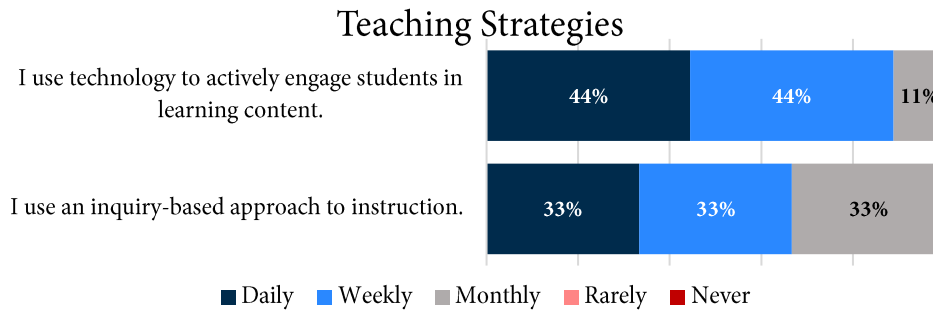
Participants were asked to rank the frequency with which they engaged in a list of practices by selecting *Daily*, *Weekly*, *Monthly*, *Rarely*, or *Never*. These statements addressed teaching strategies that would be encouraged during the workshop series: use of digital resources, use of museum digital resources, Thinking Routines, and other techniques.

Teachers used media such as videos more often than primary sources, lessons, and other artifacts they found online. However, neither of these resources was used frequently; for a given resource, three teachers or less used it on a daily basis. Three teachers had never used artifacts from a museum.

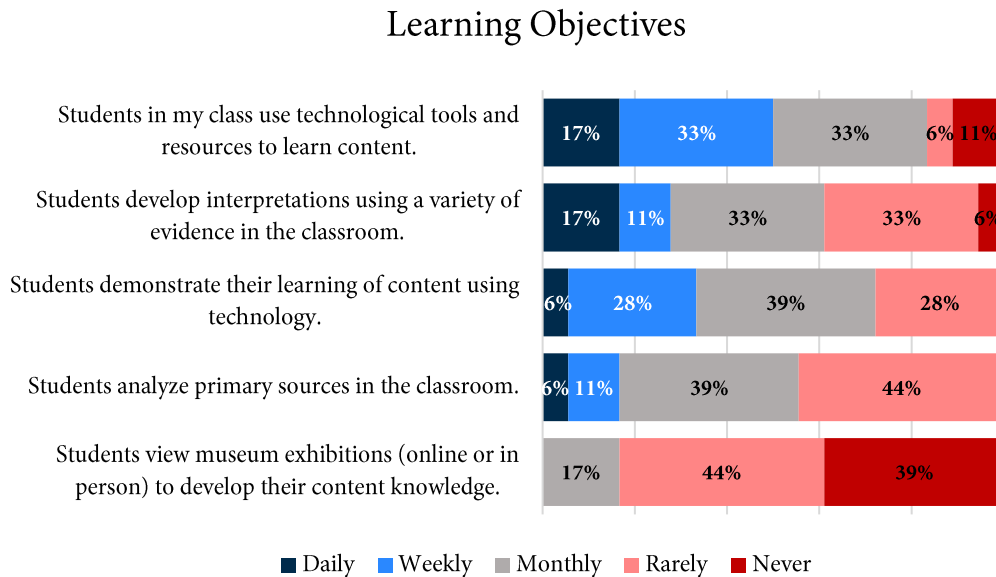
### Types of Digital Resources



The majority of teachers used technology to actively engage students on a daily or weekly basis. One-third of teachers used an inquiry-based approach daily, another third weekly, and the last third monthly.

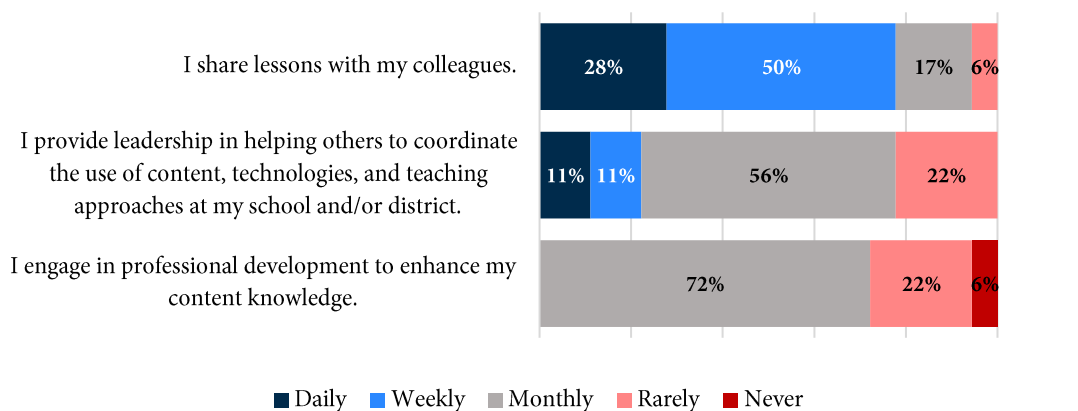


Students were more likely to use technology to learn than to use it to demonstrate learning. Students were less likely to analyze primary resources and view museum exhibitions.



Teachers often shared lessons with their colleagues and somewhat regularly even provided leadership in helping others. However, teachers *Rarely* or *Never* engaged in professional development to enhance their content knowledge.

### Teacher Collaboration



### Professional Development Outcomes

The post-survey for all four workshops asked participants to rate their level of agreement with a series of statements regarding what they learned.<sup>5</sup> The majority *Strongly Agreed* or *Agreed* with the statements. Only one participant – in Workshop 3 – selected *Disagree* for one statement: “Collaborating with my school-site team helped me to use the Smithsonian Learning Lab resources and collections in my classroom.” No one selected *Strongly Disagree* for any statement, except the participant noted earlier who selected *Strongly Disagree* for every statement in Workshop 3.

#### ***Gaining Usable Skills***

All participants, with one exception, agreed that the workshops provided usable skills that would be valuable over the long term. The percentage choosing *Strongly Agree* almost doubled between Workshops 1 and 2 and Workshops 3 and 4.

<sup>5</sup> The Workshop 1, 2, and 3 post-surveys asked identical questions. The Workshop 4 post-survey included only some of the earlier questions; where that is the case, the Workshop 4 responses are included in the tables, along with the results of Workshops 1-3.

**I gained usable skills and will be able to apply them to my professional life.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	37%	63%	0%	0%	0%	19
Workshop 2	32%	68%	0%	0%	0%	19
Workshop 3	68%	26%	0%	0%	5%	19
Workshop 4	69%	31%	0%	0%	0%	13

**Using the Smithsonian Learning Lab**

*Survey Results: Workshop Participants*

In the first three workshops, the majority of teachers selected *Agreed*, and a smaller percentage marked *Strongly Agreed*, for each statement relating to the value of the workshop with respect to using the Smithsonian Learning Lab. One or two people were *Uncertain*. There was less agreement about the help provided by the school-site teams, and the results after Workshop 3 were quite mixed. There was more uncertainty and disagreement in the third Workshop.

**The workshop helped me use the Smithsonian Learning Lab.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	37%	58%	5%	0%	0%	19
Workshop 2	58%	42%	0%	0%	0%	19
Workshop 3	68%	26%	0%	0%	5%	19

**The workshop helped me to use the Smithsonian Learning Lab resources and collections in my classroom.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	32%	<b>58%</b>	11%	0%	0%	19
Workshop 2	47%	53%	0%	0%	0%	19
Workshop 3	63%	26%	5%	0%	5%	19

**Collaborating with my school-site team helped me to use the Smithsonian Learning Lab resources and collections in my classroom.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	26%	74%	0%	0%	0%	19
Workshop 2	37%	47%	16%	0%	0%	19
Workshop 3	53%	32%	5%	5%	5%	19

*Interview Results: Teacher-Fellows*

**Questions: Can you tell me about your experience exploring SI digital content? Can you tell me about your experience using the Learning Lab (ease of making account, collection, tools)? Can you tell me about your experience when creating collections in the Learning Lab? What was your process? How did you go about creating the collection? Can you walk me through – did you have a learning objective in mind?**

All the Teacher-Fellows commented to some extent on the value of the extensive number of resources available through the Learning Lab but described the process of finding what they wanted as “overwhelming,” “a real challenge,” and “a huge undertaking.” They joked about how they would fall “down a rabbit hole” exploring all of the amazing content. Some participants addressed the issue by conducting very specific searches. One person talked about going to the museums in person for inspiration and to find new content and create collections:

“...that was really helpful, going through the museum and knowing what I was looking through and coming with expectations already. I knew I wanted to tie it to the Constitution, and I knew I wanted to talk about specific Jim Crow laws, and having that sort of baseline was a great jumping off point for me to find additional resources.”

The Teacher-Fellows noted the importance of collaboration and practice. To the former point, one person explained that “it also helped that we got to try to teach some of the things that other people [created], and that solidified some of my understanding.” Others talked about the benefit of having Learning Lab accounts.

“It was neat to have another resource to use to compile, and to know that it’s there and that people can share it, and I can go back to it and change from year to year, and that I have a ton of great museum resources at my fingertips.”

There were some comments about difficulties using Learning Lab: tracking their resources, navigating the platform, and formatting images. Some participants felt the need to bring outside materials into their collections. Said one person, “Sometimes I just needed to go somewhere else, too, to supplement some ideas.”

### *Interview Results: Workshop Participants*

#### **Question: Can you tell me about your experience exploring SI digital content?**

Here, too, a number of teachers commented that the process, at least at first, was daunting – several used the word “overwhelming.” The issue was not so much the vast amount of resources available – as one participant said, “I was amazed at everything from postage stamps to magazine covers, ads from different periods of time – the variety kinds of resources.” Rather, it was that the search function identified thousands of resources, and the teachers had difficulty narrowing the search sufficiently to access only those resources that would be most useful for their collections. As one participant described it, “when you go to search, you find 10,000 items, and I would say more than half of them are not really relevant.” Based on other comments, it appeared that over time the process became easier, e.g., “...it was overwhelming at first until I took the time to learn to use it correctly.”

Some comments referenced the difficulty of finding resources that related to a particular subject area, for example, math. According to one person, what was available tended to be more “ELA [English Language Arts] or history-type based,” although another teacher said it was difficult to find ELA-related resources. One participant commented that it was “an easy thing to search” for their project on natural disasters, while another couldn’t find anything about the artists they wanted to include in their collection. A teacher overcame this subject matter problem by broadening their perspective: “For me, it was tricky to kind of look at it through that math lens but then I realized I didn’t need to look at it through that lens.” In addition to issues with finding resources, for at least one teacher, manipulating the resources they had in their collections (e.g., adding titles) felt overwhelming.

In building online collections, two general strategies emerged. One was to start with a focused approach that included searching through pre-made collections, looking to replace older resources that have been used in the past, or picking a specific starting point (e.g., Martin Luther King). The other approach was to start broad, including by searching on general terms using the recommended search feature, and creating a large diverse collection whose content was later narrowed down.

### *Interview Results: Teacher-Fellows*

#### **Question: What does a model collection in the Learning Lab look like in your opinion? What are their characteristics/components? Why?**

The majority of Teacher-Fellows believed that a model collection in the Learning Lab should be customizable – teachers and students should be able to adapt the collections to best fit their needs. They pointed out that every classroom is a unique community in which some artifacts are more relatable and pertinent than others. In addition, teachers instruct in different ways – as one person observed, “I set it up so you can follow it, and it’s easily followed the way I teach it, but also there [is room] to make it your own and however it works for you in the classroom.” Students should also be able to develop or modify the



collections. As one Teacher-Fellow put it, the Learning Lab should be “allowing students to work within that space...so the ownership of the collection can also connect more to the students.”

Most of the interviewees said that a model collection should be easy to use by both teachers and students. Teachers should be able to create collections and immediately use them in class without difficulty. Students, even younger ones, should have an easy time creating accounts and collections. Making the collection more user-friendly “would be an easier way to differentiate for different learning styles. Kids could learn at their level.”

Also highlighted was the value of templates that offer an educational structure and highly engaging content. The Teacher-Fellows liked having ways to present the collections, such as the Thinking Routines or a “step-by-step lesson plan.” The selected resources should be unique, something “that normally wouldn’t be available in a classroom.” Several interviewees recommended providing additional background information on each artifact so that “teachers would be able to read and could understand the history or the culture and give some background context.”

### *Interview Results: Teacher-Fellows*

**Question: What does a model learning experience in general look like in your opinion? What are their characteristics/components? Why?**

The Teacher-Fellows identified a number of characteristics that a model learning experience should have:

- A starting point, “some type of provocation, an artifact or something, that gets people curious.” It is something that peaks students’ interest, gets them thinking, and, as one person added, is “something related to the real world.”
- A way to determine students’ existing knowledge of a topic. Teachers should be able to “get an idea of where peoples’ ideas are” to help them better prepare their lessons.
- Interactive, engaging, and hands-on.
- Able to give students independence, because what is student-driven is more effective and beneficial to overall learning, to wit,

“It’s the gradual release of responsibility, the I do, you do, we do is very helpful. Giving students the opportunity for guided instruction and then independent work.”

“... provide different options and angles to slowly allow the teachers to step backward and kids to step up and be able to apply things themselves.”

- A way to assess learning

“... [to] show their understanding of something; what would be the right connections to the show the understanding behind it. That would be the ultimate vision.”

“That of course includes checking for assessment... in an early childhood environment, we’re always doing a lot of formative assessment, and that’s driving my instruction.”

Other aspects the Teacher-Fellows wanted were:

- Ways to see examples of assignments/projects.
- A structured walk-through of how to create their own assignment.
- Assignments that can be customized.
- Ways for students to share.
- Content linked to standards and to instruction at a proper pace, e.g., “giving students an opportunity to slow down and think.”

### *Interview Results: Teachers at the Workshops*

**Questions: Can you tell me about your experience using the Learning Lab? (ease of making account, collection, tools)? Can you tell me about your experience when creating collections in the Learning Lab? What was your process? How did go about creating the collection? Can you walk me through – did you have a learning objective in mind?**

When asked about their experience using the Learning Lab, participants were very positive. Many commented that the interface was streamlined or user-friendly, and that adding new materials to their collections was “easy,” “pretty easy,” “very easy,” and “super easy.” Two people commented on specific functions the site offered: the question prompter and the quiz feature, respectively. Several said the help they received from the facilitators positively influenced their experience. Two people commented that practice was the key to grasping how to use the Learning Lab effectively.

Participants also encountered some challenges in working with the Learning Lab: uploading a presentation, learning how to save changes, and learning how to navigate the search function. One stated that in general “the efficiency of it [the Learning Lab] is really difficult.” Another wanted more background information on each artifact.

### ***Creating Collections***

#### *Survey Results*

Nearly everyone *Agreed* or *Strongly Agreed* that the workshops helped them create collections. As with the earlier question about the efficacy of the school-site teams, in Workshops 1 and 2 there was uncertainty their usefulness. For the most part the uncertainty had disappeared by Workshop 3.

**The workshop helped me create collections and sets.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	37%	63%	0%	0%	0%	19
Workshop 2	58%	42%	0%	0%	0%	19
Workshop 3	63%	32%	0%	0%	5%	19

**Collaborating with my school-site team helped me create collections and sets.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	21%	68%	11%	0%	0%	19
Workshop 2	37%	42%	21%	0%	0%	19
Workshop 3	58%	32%	0%	5%	5%	19

In the post-survey for Workshop 4, participants were asked to reflect in open-ended questions on some of their experiences with the program and ability to implement in the classroom what they learned from the program. Participants noted that at least initially they faced obstacles in creating their collections. One person “struggled at first” but later on became more comfortable with the process. Another described the process as “time-consuming,” and a third mentioned some “glitches with uploads.” Based on further comments, it appears that the primary issue was the search feature, especially when looking for certain items. One participant “found it difficult to find specific items that I was looking for. I was sometimes overwhelmed by the amount of material that was tangentially related to my search term.”

Another challenge was how to connect teachers’ collections to their curricula. In general, participants used two strategies: creating collections for specific lesson plans or creating general collections that would inspire new lesson plans. For participants who wanted to supplement current lessons, the searches could be more specific either to a topic (e.g., living organisms) or a type of resource (e.g., primary sources). Some teachers searched on more general themes and selected items that interested them or that they might be able to use during the school year. Sometimes a general search led to a narrower topic (e.g., from searching science topics they decided on the solar system). Other times a teacher’s collections served as a general repository for high quality items.

Another question was how and why teachers chose their digital resources. Many said it was based on the unit they were covering in school, and usually these teachers had a subject or even a resource in mind before searching. However, others were inspired by a particular object, and rather than choosing the object for a lesson, they found a lesson with which to use the object.

Some teachers selected their digital resources because they could use them to generate questions and comments. As one person explained, “I chose resources that would spark conversation, not necessarily items that were related to [my subject matter] content.” Still other teachers chose resources to encourage

their students to engage in a particular style of thinking. One other approach was to look for things to support the goals of their activity, e.g., to get students to investigate an object in detail, to foster general understanding, to present objects that were familiar or unfamiliar, or to use the object as a stand-alone or to provide a greater historical context.

### *Interview Results: Teachers at the Workshops*

All participants agreed that the Learning Lab had a positive influence on their collections. Many highlighted the value of having access to so many resources and how this encouraged them to think outside of the box. One teacher mentioned how the textbook they currently use is “20-plus years old and is falling apart,” which makes access to images and new resources all the more important. Another described how the process of creating collections and looking for new materials inspired them to be more creative with their material:

“At first it was overwhelming and hard to think of how to connect it, but I think it has opened me up to see that it is useful and beneficial to bring in these things and take the time away from your normal book reading and things like that to actually make them think about something they are actually looking at.”

### *Other Content Providers*

#### *Interview results: Teacher-Fellows*

**Question: What content providers do you use? What characteristics do you like best about them? How does the Learning Lab compare with those other content providers?**

More than one Teacher-Fellow mentioned three providers: Pebble Go, school library subscriptions, and the Library of Congress. Other providers included TedED video, National Geographic, YouTube, Carnegie (local Pittsburgh museum), History Center (local Pittsburgh museum), Discovery Education, Scholastic, Pebble Go States, Trueflix, Google, World Book, Quo Canyon.org, PBS sites, online non-fiction books, and encyclopedia-type sources. The Teacher-Fellows noted that math curricula have a digital component to them, as do reading curricula.

When asked about why they use these content providers, the Teacher-Fellows highlighted the importance of accessibility and ease of use, particularly by students, especially younger ones.

“I like when they are accessible for the kids, that they can click themselves and work through on their own.”

“In kindergarten we don’t have a lot of troubleshooting skills yet. It’s something that is easy for them to navigate...”

“Kids can get on them themselves. They don’t have to sign in.”

The Teacher-Fellows also cared about the content being provided. They wanted leveled content that was appropriate for their students but that would also be informative for students at a higher or lower level than their classmates. And they wanted fresh and intriguing content.

“Those more recent pieces have a headlining artifact showcase or exhibit, and those tend to be the best because they are fresh, and they have a fresh lens on them, and they have some type of hook on them that the kids are interested in.”

### *Interview Results: Teachers at the Workshops*

When asked what other content providers they used, many teachers noted Google as the primary or only provider (7 of the 10 interviewees). Other sources noted by a small number of teachers were YouTube, Brain Pop, Teachers Pay Teachers, Scholastics, StoryWorks, History.com, Time Life, Discovery Education, the Tenement Museum, and the Library of Congress.

When choosing content providers, participants highlighted three key attributes: accessibility, authenticity of the source, and variety of content. Accessibility and variety were highly attributed to Google – it is easy, quick, and provides thousands of results. But participants also wanted to ensure the artifacts were real and the information was accurate. They did not associate authenticity with Google. As one participant said, “Google is the big one, but I always want to make sure it’s a legit thing.” Authenticity was associated with sources like StoryWorks, history.com, and the Library of Congress.

In terms of how the Learning Lab compared with the other content providers, it got high praise for its kid- and parent-friendly content. As one participant said, “if I make a collection, I know it’s a safe collection, and it’s not just going to be something they get into because they typed it in Google.” Or, as another teacher commented more bluntly, “they [the students] are not going to get all kinds of garbage.” Participants also appreciated the Learning Lab’s high level of authenticity and accuracy.

Where the Learning Lab did less well was in providing easy access to content, an issue that led some to favor the other content providers. One person expressed these mixed feelings, saying “I like Smithsonian [Learning Lab] better, but it’s easier to find things with the other [sources I use].” From another teacher, “finding things at the Smithsonian is nice, but it takes a while and weeding through to find exactly what you need.”

Two other comments are worth mentioning:

- The lack of adequate computers or tablets for each student or for more than a limited period in the data curtailed students’ access to and use of digital resources.

- The importance of developing reading skills” – “I’d like students to still develop reading skills in social studies and science, and I found myself using outside resources, like *Smithsonian Magazine*...”

### ***Understanding and Using Project Zero Thinking Routines***

There was a marked increase in the comfort teachers felt about using the Thinking Routines between Workshops 1 and 4. At the end of Workshop 1, 16% of participants *Strongly Agreed* and 63% *Agreed* they were comfortable, whereas by Workshop 4, 54% *Strongly Agreed*, with the increase coming from those who had chosen *Uncertain* – no one chose it in Workshop 4 –or *Agreed*. There was growth for the other two statements on improved understanding and the positive effect of the workshops on comfort levels, but it was more mixed.

#### **I am comfortable using Project Zero Thinking Routines.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	16%	63%	21%	0%	0%	19
Workshop 2	26%	63%	11%	0%	0%	19
Workshop 3	37%	47%	11%	0%	5%	19
Workshop 4	54%	46%	0%	0%	0%	13

#### **The workshop activities improved my understanding of Harvard Project Zero Thinking Routines.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	32%	68%	0%	0%	0%	19
Workshop 2	68%	26%	5%	0%	0%	19
Workshop 3	58%	32%	5%	0%	5%	19

#### **The workshop activities improved my comfort level with using Harvard Project Zero Thinking Routines in my classroom.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	26%	74%	0%	0%	0%	19
Workshop 2	58%	42%	0%	0%	0%	19
Workshop 3	58%	32%	5%	0%	5%	19

### ***Using Digital Resources***

In all the workshops, less than a majority of teachers *Strongly Agreed* that they were comfortable using digital resources either in their classroom or with the Thinking Routines. In every workshop there was at least one participant who marked *Uncertain*.

#### **I feel comfortable integrating digital resources in my classroom practice.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	39%	44%	17%	0%	0%	19
Workshop 2	37%	53%	11%	0%	0%	19
Workshop 3	47%	42%	5%	0%	5%	19
Workshop 4	38%	54%	8%	0%	0%	13

#### **I am comfortable using digital resources with Project Zero Thinking Routines.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	21%	68%	11%	0%	0%	19
Workshop 2	26%	68%	5%	0%	0%	19
Workshop 3	42%	47%	5%	0%	5%	19
Workshop 4	46%	46%	8%	0%	0%	13

### ***Becoming a Better Teacher***

The majority of responses to the statements that the workshop helped them become a better teacher shifted from *Agree* to *Strongly Agree* across Workshops 1, 2, and 3. However, there was no change in the percentage of teachers who were *Uncertain*, and only a small decrease in the number who thought the school-site team collaboration made them a better teacher.

#### **The workshop helped me become a better teacher.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	26%	63%	11%	0%	0%	19
Workshop 2	47%	42%	11%	0%	0%	19
Workshop 3	63%	21%	11%	0%	5%	19

### Collaborating with my school-site team helped me become a better teacher.

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	21%	68%	11%	0%	0%	19
Workshop 2	47%	42%	11%	0%	0%	19
Workshop 3	58%	32%	5%	0%	5%	19

### *Classroom Practice*

The post-surveys for Workshops 1-3 had questions about using digital resources with the Thinking Routines. The post-Workshop 4 survey asked for participants' reflections on the same topic. This question was also asked in the interviews with 10 of the teachers in Workshop 4.

### *Survey Results*

As Workshop 1 was the first of the series, only a single participant had used museum digital resources with the Thinking Routines, but many participants indicated they planned to do so "once school starts" or on specific projects they were planning. The teacher who had used museum digital resources said it was "for a Science project and my Makerspace Club."

After Workshop 2, 14 of the 19 teachers said they had used museum digital resources with the Thinking Routines since the previous workshop. Some indicated the specific activity or strategy they used: See/Think/Wonder, "What makes you say that," Claim/Support/Question, using art to introduce a subject, and the deck of cards. Others mentioned the subject they were teaching (i.e., Native Americans, natural resources, and math). Some who said they had not used museum digital resources indicated they planned to do so.

After Workshop 3, all except two teachers had used museum digital resources with the Thinking Routines since the previous workshop. Many indicated the specific activity or strategy they used: See/Think/Wonder, "What makes you say that," using art to introduce a subject, and making collections.

In their post-Workshop 4 reflections, overall the teachers described very positive classroom experiences, using words like a huge success," "a good experience," "[it] went really well," and "[it] worked wonderfully." Many offered highlights about how the collections promoted a deeper understanding of the material being taught and noted a high amount of participation and engagement by students. The students appeared to enjoy the digital resources, formed their own opinions about them, and frequently contributed to discussions. Teachers often found the discussions "very productive" at achieving the intended goal of the activity. Following are some descriptions about how their students interacted with the material:



“We spent a significant amount of time analyzing the various pieces of the collection and diving deeper into their meaning.”

“...the deep thinking that was happening”

“They dug deeper into the content than I had ever expected.”

According to some teachers, the students welcomed this change in the normal class schedule, even if some were confused by the process or goals at the beginning.

There were some workshop participants who did not find their online collection, or online collections in general, to be effective with students who didn't have adequate background information. In the same vein, they found that students who lacked prior exposure did not connect to the online collections. One mentioned that their “lower group struggled with the See, Think, and Wonder [activity].” At the same time, a few teachers stated strongly that combining a digital resource with a Thinking Routine provided an “even playing field” for student discussion. As one explained, “Students who don't know ‘right answers’ can participate with their observations. Also, almost every student has an opinion on what they think is happening in an image.” One interviewee said they would be modifying the collection so students could relate to the material more easily.

When teachers were asked what they would do differently the next time, the majority said they would allocate more time for the activity. Their sense was that the activities were more successful with repetition or that the collection just took longer for students to grasp than expected. A few teachers wanted to grow their collection and include more resources. As one said:

“I was using these artifacts to support our current science curriculum. However, I believe that with the addition of a few other resources or artifacts, it could be a standalone instructional unit.”

### *Interview Results: Teacher-Fellows*

**Question: How did you apply the Project Zero Thinking Routines to the digital museum resources? Can you talk about your experience in applying digital museum resources to Project Zero Thinking Routines?**

Many of the Teacher-Fellows highlighted the importance of closely investigating an artifact. The reason is that a lot of Thinking Routines are centered around looking closely at something, which fits perfectly with detailed artifacts. One interviewee talked about using See/Think/Wonder to “have them [the students] kind of pull the picture apart and look at the different pieces.” Other Teacher-Fellows described having students look closely at the artifacts (e.g., a piece of art) and discuss what they are looking at.

“So it [the Thinking Routines] gives the kids a different lens to look at it rather than just ‘here is an artifact, what do you think it was for?’”

The Thinking Routines could also be used to encourage students to ask questions. One Teacher-Fellow described adding student questions on an artifact investigation map; another one collected sticky notes. Often the questions and other routine thinking led to deeper thinking. One Teacher-Fellow used the Thinking Routine Connect, Extend, and Challenge to encourage students to dive deeper into the material:

“So looking at an image or whatever it is, an artifact that you’re looking at from the museum that naturally lends itself to asking bigger questions, like what are you looking at, just sort of exploring open-endedly, and then diving a little bit deeper into it with more resources and more research to find out more about it.”

The Teacher-Fellows also mentioned the ease of using the Thinking Routines and their ability to connect resources. The routines allowed students to make their own connections between the different artifacts and lesson material.

“The Project Zero is the thinking between the different artifacts and how they do relate, so that part of it is a nice blend...we want the kids to make the connections. We don’t want to shove it down their throats. We want them say, ‘so if that’s that piece, what about this one?’”

Another Teacher-Fellow added that the Thinking Routines naturally led students to ask questions that could be answered by another artifact, while another added, more generally, that Thinking Routines can “link the different ideas of a lesson.”

Last, some Teacher-Fellows believed the Thinking Routines increased student autonomy by teaching them the skills necessary to investigate digital resources on their own. As one person said, “while we start together, toward the end of the collection, they are starting to do it themselves and apply it themselves.” This, in one Teacher-Fellow’s opinion, is the role of the Thinking Routines.

“Like I said, I like to be able to take a step backwards, and I think the Project Zero forte is to let the kids take the lead eventually. Once we model some thinking and, if we have more artifacts for them to apply what we have been modeling, [so much] the better.”

### *Interview Results: Teacher-Fellows*

#### **Question: What value do the digital resources add to the Thinking Routines in your opinion?**

The most common response was access and ability to engage with digital resources. The Teacher-Fellows saw the Learning Lab as incredibly beneficial in this regard:

“The availability of things. Honestly before I went to DC, I didn’t know the Smithsonian had all these artifacts online, so that’s a huge gain for us. Just having those artifacts available is amazing.”

“By having access to the digital resources at the Smithsonian, students can see far more than we ever would see things that aren’t here in Pittsburgh. It’s access. It’s access for everyone.”

The high quality of the Learning Lab’s resources was a big plus. The Teacher-Fellows liked the ability to show their students detailed images and for their students to be able to access the resources themselves.

“Actually, the ability to just create, to zoom in on a section of an image and really be able to do that in the platform itself, was nice.”

“It adds this extra layer of being able to see it better and feel it the way it is supposed to be seen, big and not tiny on a piece of paper you will just throw away.”

### *Interview Results: Teacher-Fellows*

#### **Question: How did the use of the Learning Lab collection add value to your teaching experience?**

The Teacher-Fellows had an overwhelmingly positive experience using collections in the classroom. Many highlighted how the collections peaked students’ interest and allowed them to make connections. They described students as more engaged and even excited about the activities involving the collection. As one person explained, “It was awesome to do and amazing to see the kids make the connections between the artifacts and the things that we were learning about.” A common theme was that using digital resources improved student learning.

The types of digital resources the Teacher-Fellows used included images, videos, audio, and interactive games. One interviewee explained the significance of employing these different mediums in the classroom:

“We always read the poem “I Too” by Langston Hughes, and Ashley said, ‘Here is a link to Langston Hughes actually reading the poem himself. So having the kids be able to hear his voice was awesome and meaningful.’”

Several interviewees commented on how easily their collections connected to lessons in the classroom. They often used the digital resources to provide context or introduce new units. The artifacts helped students relate to the past and “put themselves in the shoes” of people who came before. One Teacher Fellow described the experience of showing the students a picture of famous jazz musicians:

“They were putting faces to it, especially after they researched. Because they felt they knew these people, they knew all about them, their family, everything that they did, and it made it more real for them....”

Other uses of the collections were to start investigations and inspire research. One class used a Thanksgiving address to figure out what was important to the Hoda Mashone people. Another used a piece of beautiful artwork to discuss the artist’s values and then the class’s values.

The majority of Teacher-Fellows said that the new and seemingly unlimited resources provided by the Learning Lab were invaluable. The Learning Lab offered high quality resources to better engage students and improve instruction. One person articulated this benefit clearly:

“Again, just the availability of the resources available is amazing, I think. I would be either using a boring textbook or searching for these images on my own and trying to pull them from a million different resources, so having them all in one curated place is a really nice go-to....”

Many Teacher-Fellows noted that the Learning Lab also gave them a new perspective – it caused them to re-evaluate how they structure lessons and what resources they use. They were spending more time reflecting on the student learning experience and how best to make it exceptional. Following are some examples of how the Teacher-Fellows improved their teaching through the Learning Lab:

“We tend to build units. Instead of building it purely on a concept, we can build it on a specific artifact that represents something deeper. And I think that idea itself is pretty powerful.”

“It caused me to... really reflect on what the students were learning and what thinking and learning look like.”

“Now that I have a better understanding, I’m able to transfer that into lots of different artifacts, not just in these three collections I have made but with other lessons.”

### *Interview Results: Teachers at the Workshops*

The interview questions did not parallel the survey questions one for one. The responses summarized here apply to multiple aspects of the teachers’ classroom experience from the perspective of the use of SI collections and Thinking Routines in their teaching practice, the value of this approach to their students, and their personal professional development.

**Question: Did you try out your collection in the classroom? Can you tell me about it? How did it go? How did the use of the Learning Lab collection add value to your teaching experience?**

Overall, teachers were impressed by the success their collections had in the classroom, particularly when it came to the level of engagement of their students. Most thought the collections engaged their students, increased participation, and resulted in a higher level of thinking and learning. They used words like “creative,” “fantastic,” and “cool” to describe the results. As one participant explained, “I was so impressed with their thinking and their wonders.” Another said the students looked “more deeply into things around them” and displayed “more elevated” thinking. Even students with short attention spans or who “typically do nothing” were active in the discussions and projects, according to another teacher.

Some participants appreciated how using the Thinking Routines with their collections created a common language and set high standards. One teacher described a fairly common experience:

“Earlier I was saying to our group up here, one of the ... teachers is also using What Do I Notice and What Do I Wonder?. Kind of that common language across different classes so it became so routine for the kids. Before I would even ask them ‘what do you see?’ or ‘what do you think about this,’ they would say, ‘I see these shapes’ – before I even asked which is great. It became a routine, a habit for them.”

Participants also talked about how the collections changed the general class structure in a positive way. One teacher described how her students welcomed the change in pace. Another mentioned the importance of breaking the routine to improve learning, although one teacher noted the challenge of changing a structure – this person’s students had difficulty grasping a whole new way of thinking, although with time and examples the students came to understand the new style and became engaged.

A final point is that the collection served as a tool to guide students toward the intended learning without having to “pose those questions or direct them in a certain way.” This style of learning, several teachers noted, gave students more independence.

### *Interview Results: Teacher-Fellows*

#### **Question: What value did the use of the Learning Lab collection add to your students’ learning experience?**

Some Teacher-Fellows described how the Learning Lab increased student autonomy and inspired future learning. Students were asking more questions and had the freedom to explore and find answers on their own. According to one interviewee, “Adding more museum-style resources to the lesson allowed us to hand it over to the kids more to explore.”

All the Teacher-Fellows commented on the importance of accessible resources. Students had access to a wide variety of artifacts that they interacted with online and looked at closely. One interviewee explained that “them being able to see things they wouldn’t have been able to see otherwise I think is pretty

remarkable.” Another described how access to these resources has “given my students a broader range of experiences.”

The Learning Lab was also said to have peaked students’ curiosity and improved their ability to make connections and think more deeply. One teacher described how using large, detailed images inspired participation and discussion in their classroom – “It gets them talking when they can see it big and in person.”

There were references to the importance of using resources from the Learning Lab to give students context into larger units and themes. The resources helped students visualize the past and connect with historical people and events. According to one Teacher-Fellow:

“It [a Civil Rights artifact] helps them see that these are real people, not just a million years old. That these are people just like them going through these big changes in our country. They are able to relate on a human level.”

An interviewee mentioned the importance of student collaboration. Increased autonomy allows students to discuss with each other and learn from each other.

“They were able to interact with it with each other instead of just doing something on their own. I think it helps, too, when they have each other to go back and forth and answer each other’s questions.”

### *Interview Results: Teachers at the Workshops*

#### **Question: What value did the use of the Learning Lab collection add to your students’ learning experience?**

Many teachers commented that the Learning Lab improved students’ learning experiences. Specifically, it led to high levels of thinking and engagement that resulted in more learning. As one teacher explained, “I feel like they know social studies so much better this year, and they are really enjoying it because of that.”

Other teachers’ comments similarly suggested that the Learning Lab had a valuable effect of helping both students and teachers slow down. The collections and teaching techniques that accompany them encouraged students to spend more time thinking rather than focusing solely on the final project or test material. One teacher elaborated on this point, saying that “It was those little things they were noticing because we did slow down. We took a look at things, and we didn’t just dive into the project.”

Teachers noted how the Learning Lab provided exposure to a variety of places and things that students may never have seen in-person, and it offered a global experience:

“For students who never get to go to a museum, who never get to travel to another part of the world, obviously there are different artifacts in there, articles and different paintings and things like that. I think that when I showed the collection to my class at first, they were mesmerized or enlightened.”

For some teachers, this outcome was one of the most important and rewarding parts of teaching.

Another teacher added a related point: the Learning Lab’s ability to provide general exposure, combined with its accessibility, helped make the content available at all learning levels. Said one interviewee,

“You talk about accessibility and multiple points of learning, and it just opens a door that every student can walk through. Whether you’re the best reader or the worst reader, whether your parents have taken you to France or downtown Pittsburgh, everyone can look at that picture and see something and talk about it.”

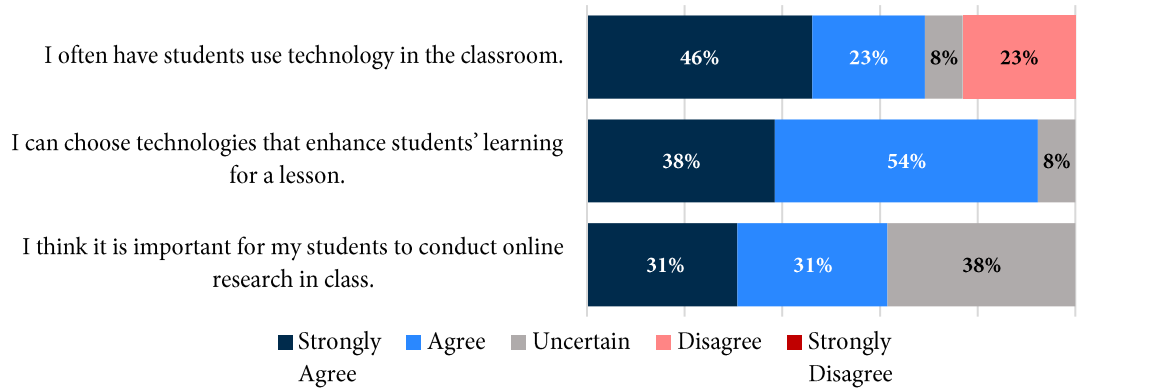
The Learning Lab was seen as providing valuable context through images and paintings that allowed students to better visualize history. Their ability to focus on specific objects “helps them understand the image more and what the overall intent was.” All of this, teachers claimed, is important to supporting students’ overall learning inside and outside the classroom.

### ***Comfort with Using Digital Resources and Teaching Strategies***

Overall, teachers responded that they were comfortable using digital resources and agreed that digital resources are an effective teaching tool. In the post-Workshop 4 survey, most participants *Agreed* or *Strongly Agreed* with the statements on these topics. The interview comments paralleled this outcome: teachers valued having new resources and new skills to use in the classroom and found that they increased student learning.

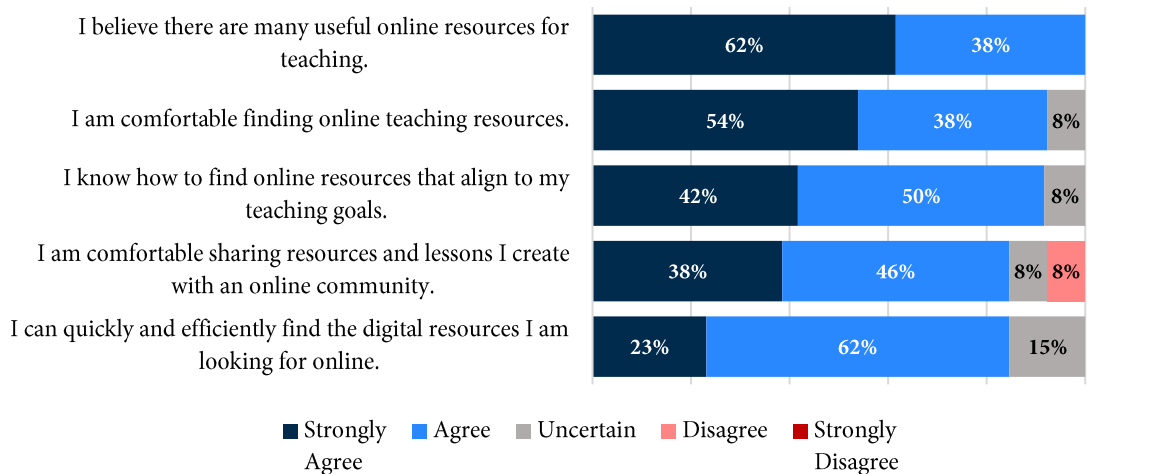
The percentage of teachers who *Strongly Agreed* that technology can play a productive role in classroom instruction doubled between the pre- and post-survey. Although 23% of teachers did not often have students use technology in the classroom, they all agreed that it is important for students to conduct online research and that they, as teachers, had the skills to choose technology that can enhance learning in the classroom.

## Students Using Technology



The percentage of teachers who *Strongly Agree* that there are many useful online resources for teaching more than tripled, and those who were comfortable finding online teaching resources nearly doubled between the pre- and post-Workshop 4 survey. The percentage of teachers who did not agree or were *Uncertain* decreased to zero. Only a small percentage of teachers, 8%, were uncomfortable sharing teaching resources with an online community.

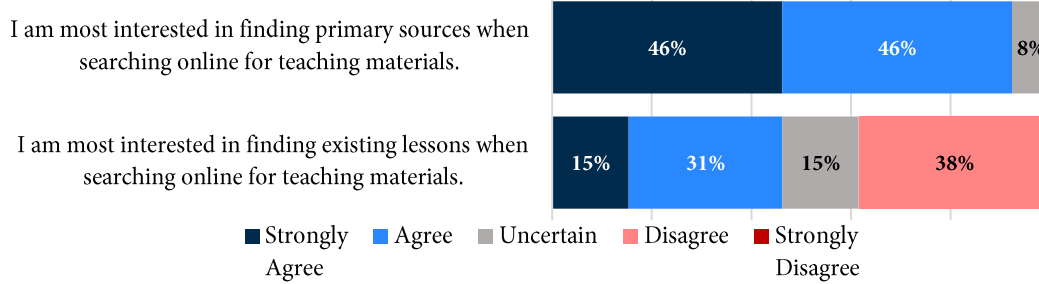
## Online Resources



Similar to the pre-survey, more teachers were interested in finding primary sources than existing lessons online.

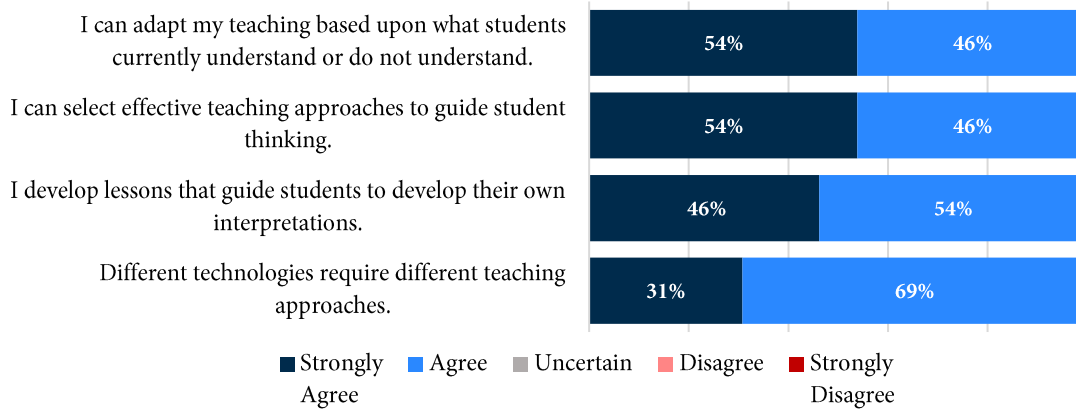


## Online Teaching Materials



All teachers agreed that they have the skills necessary to develop and adapt teaching approaches to best benefit students. The percentage of teachers who were *Unsure*, *Disagreed*, or *Strongly Disagreed* on the pre-survey decreased to zero.

## Teaching Strategies

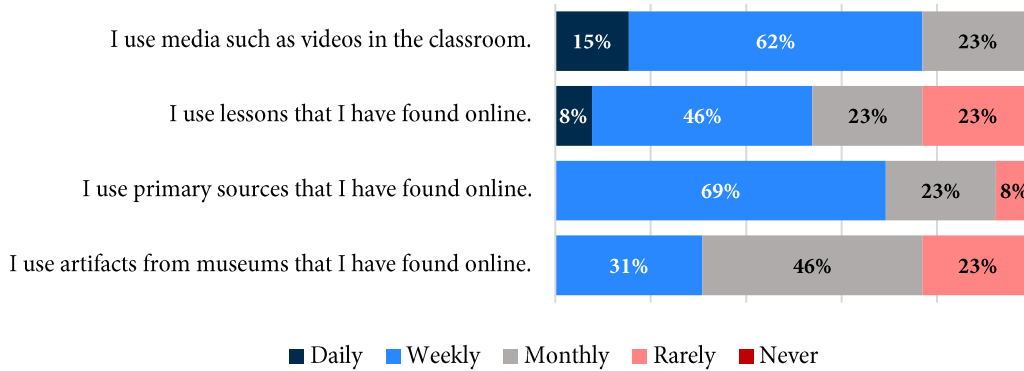


### *Frequency of Using Digital Resources and Teaching Strategies*

Overall, participants showed a higher frequency of using digital resources, Thinking Routines, and other teaching strategies in the classroom. Although a sizable number of participants selected *Rarely* or *Never*, teachers were integrating practices from the workshops into their classrooms more often.

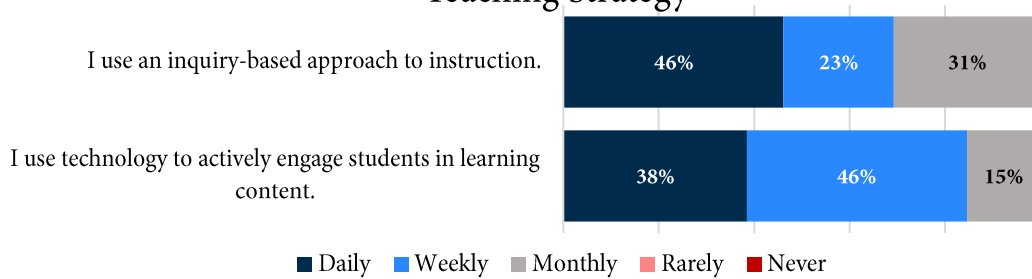
Participants often used media and lessons found online in the classroom. Although no participants indicated they use primary sources found online or artifacts from a museum on a daily basis, the majority used primary sources on weekly and museum artifacts at least monthly. The percentage of teachers who use museum artifacts on a weekly basis increased by five times between the pre- and post-surveys.

## Types of Digital Resources



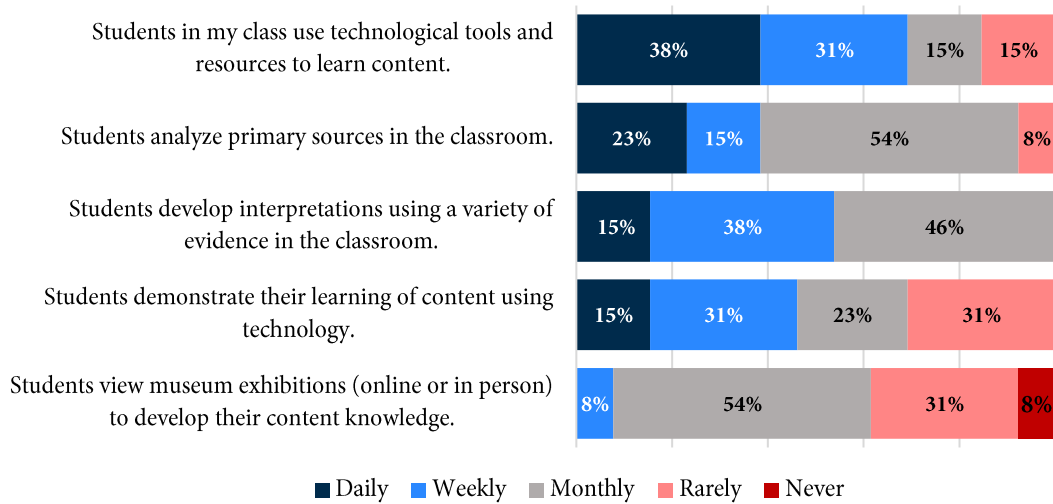
The percentage of teachers who used an inquiry-based approach and/or technology on a daily basis increased between the pre-survey and post-survey. All teachers used both of these teaching strategies at least monthly.

## Teaching Strategy



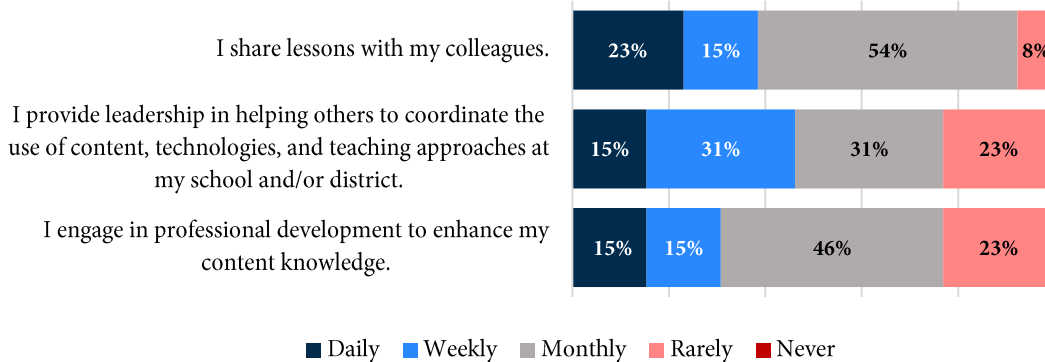
Students were still more likely to use technology to learn rather than to demonstrate learning. One in five teachers had students analyze primary sources on a daily basis. No teacher had students view museum exhibitions on a daily basis; two teachers *Never* had students do so.

## Learning Objectives



All teachers had participated in the collaboration practices. The majority of teachers shared lessons with colleagues on a monthly basis.

## Teacher Collaboration



## Future Use of Museum Digital Resources with Project Zero Thinking Routines

The fourth post-Workshop 4 survey asked participants the open-ended question, “How do you see yourself using museum digital resources with Project Zero Thinking Routines after this workshop?” Overall, teachers expressed a general interest in using or continuing to use what they learned. One expressed a sentiment shared by many others: “I will continue to curate collections that align with the standards that I am teaching in my classroom to deepen student knowledge and promote critical thinking.”

Many participants wrote that they planned to use museum digital resources with the Thinking Routines to actively engage students in the material. They saw these resources as another way to help students synthesize information, examine artifacts, make discussions more relevant, and supplement general learning. Some noted specific initiatives like a 3D project of a city, while others mentioned specific subjects like historical fiction and science. One person intended to share the technique with colleagues. Another had been using these techniques on a monthly basis.

## Quality of the Workshops

In their post-survey responses for the first three workshops, almost all participants responded positively about the workshops, selecting *Agree* or *Strongly Agree*. The number choosing *Strongly Agree* increased over the course of the three workshops. In Workshop 1, for all but one statement the majority of participants selected *Agree*. In Workshops 2, 3, and 4 majorities selected *Strongly Agree*. No participants selected *Disagree* for any of the statements. One person (5%) selected *Strongly Disagree* but, as noted, there is reason to believe this person chose that answer in error.

### I felt that the workshop was well-organized. \*

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	42%	53%	5%	0%	0%	19
Workshop 2	79%	21%	0%	0%	0%	19
Workshop 3	79%	16%	0%	0%	*5%	19
Workshop 4	69%	31%	0%	0%	0%	13

\* It's worth noting that due to weather/travel cancellations, two of the four professional development facilitators who were traveling to Pittsburgh from Washington, D.C. missed the first half of workshop 1. This might have had an effect on teachers' perceptions of the workshop's organization.

### I felt that the main points were well covered and clarified.

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	42%	53%	5%	0%	0%	19
Workshop 2	58%	42%	0%	0%	0%	19
Workshop 3	74%	21%	0%	0%	*5%	19
Workshop 4	69%	31%	0%	0%	0%	13

**I felt that the material was informative and easy to understand.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	37%	63%	0%	0%	0%	19
Workshop 2	53%	47%	0%	0%	0%	19
Workshop 3	68%	21%	5%	0%	*5%	19
Workshop 4	77%	23%	0%	0%	0%	13

**The facilitators demonstrated comprehensive knowledge of the subject matter.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	53%	42%	±5%	0%	0%	19
Workshop 2	68%	32%	0%	0%	0%	19
Workshop 3	84%	11%	0%	0%	*5%	19
Workshop 4	92%	*8%	0%	0%	0%	13

**I felt that the facilitators conveyed ideas effectively and clearly.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	42%	58%	0%	0%	0%	19
Workshop 2	63%	37%	0%	0%	0%	19
Workshop 3	74%	21%	0%	0%	±5%	19
Workshop 4	85%	15%	0%	0%	0%	13

**The facilitators helped me to understand how the workshop material related to my own professional life.**

	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Count
Workshop 1	42%	53%	±5%	0%	0%	19
Workshop 2	47%	53%	0%	0%	0%	19
Workshop 3	63%	26%	±5%	0%	*5%	19
Workshop 4	77%	23%	0%	0%	0%	13

## ***Most Valuable Aspects***

### ***Open-ended Survey Results***

The workshop post-surveys included three opened-ended questions asking what were the most and least valuable parts of the workshop and how the workshop could be improved.<sup>6</sup>

Workshop 1: Many participants said seeing specific examples of how to use the Thinking Routines or digital resources in the classroom, for example, “I liked seeing examples of the Project Zero routines first hand and not just talking about them.” Others highlighted exploring the Smithsonian Learning Lab or learning about Project Zero Thinking Routines. Some commented more generally on having access to new resources and learning how to use them. Two participants specifically mentioned the See/Think/Wonder Activity.

Workshop 2: Many participants mentioned collaborating with colleagues. More specifically, they benefited from hearing how other educators used Thinking Routines in their classrooms. As one participant wrote, “I truly enjoyed seeing how it is used in classrooms. Sometimes it is hard to picture what it ‘looks like’ in a regular classroom.” Five teachers specifically mentioned the See/Think/Wonder activity.

Workshop 3: Participants highlighted seeing examples of how other educators incorporated Thinking Routines, online collections, and other techniques in their classroom, e.g., “being able to actually see how other educators are using this resource in their rooms in different content areas.” Other areas noted were the collaboration with other teachers, “sharing ideas,” and the hands-on experience of creating collections and using the Smithsonian Learning Lab.

Workshop 4: After finishing Workshop 4, many participants said the Thinking Routines were the most valuable part of the workshop. From one participant, “The Project Zero learning routines are something I will always use in my classroom.” Others highlighted the importance of examples of how to integrate these techniques into the classroom, having access to and knowledge about the resources provided by the Smithsonian, the collaboration, and the quality of the facilitation. One person noted that a lot of the ESL kids “feel the most comfortable in my classroom because I feel like it’s a universal language, right?”

### ***Interview Results: Teachers at the Workshop***

The interview with the 10 teachers included the question “Reflecting on the entire workshop series, what elements were the most impactful? How so?” A common response was understanding the Thinking Routines and seeing examples of how to use this tool in the classroom. Teachers viewed the Thinking

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<sup>6</sup> The post-Workshop 4 survey did not include a question about how facilitation of the workshop could have been improved. Instead, it asked participants to share any additional comments or suggestions.

Routines as a versatile learning strategy that could be applied to many different subjects and materials – “...you can use them, no matter what you’re doing, across the board.”

Seeing examples and models of how other educators have used the Thinking Routines in their classrooms was “very helpful.” As one teacher explained:

“It’s easy for someone who is not a teacher to come in and say, ‘look at this great resource,’ but then you’re thinking, ‘How can I implement this, how is this useful for me in the classroom?’ So that was my favorite part – to see how it’s actually used and useful and beneficial to the students.”

Some teachers particularly appreciated the presentations by the Teacher-Fellows – “[how they] handled project-based learning in their classroom,” “their practical knowledge and...instant tips,” and “having people that are really experienced with the collection because I will steal a good image any day of the week!”

Participants also commented on the organization of the workshop and in particular praised the workshop facilitators. They valued having instructors who were “really experienced” with “practical knowledge” and “instant tips.” One teacher described how “the facilitators brought different strengths, and that [it] was good to have a variety of presenters.” Another mentioned the positive impact of “being in different facilities” because it “added a greater dimension” to the series.

The professional development overall was seen as important and impactful. One teacher commented that “for professional developments, this was one of the more engaging professional developments.”

### ***Least Valuable Aspects***

#### ***Survey Results***

Workshop 1: The majority of participants did not respond or wrote “n/a” for the question about the least valuable part of the workshop. Only four participants gave feedback; their individual comments, respectively, were the pace being too slow, the pace being too fast, and the time spent building their own collection through the Learning Lab. One referenced the Children’s Museum visit here (and also after the other workshops). As noted, SCLDA surmised the reason may have been that the relevance to the classroom wasn’t clear.

Workshop 2: Similar to Workshop 1, the majority of participants did not answer the question. Of those who did so, the points touched on were the time dedicated to creating collections during the workshop and the Children’s Museum visit (“enjoyable” but not useful).

Workshop 3: Five participants gave responses. Several comments included the “*Making Connections*” playing cards:

“Although I liked playing the card game, I would have liked to have prior knowledge of what the cards said so I could put more effort into the discussion part of the game rather than reading off the card first to figure out what it meant.”

Others mentioned the final presentation/wrap-up, large group discussions, and the Children’s Museum visit.

Workshop 4: Only two participants offered comments. One said that “some of the content/presentations could have been streamlined,” and the other mentioned the Children's Museum art exhibit.

### *Suggested Improvements*

#### *Survey Results*

Workshop 1: Many participants did not respond or wrote “n/a” to how the workshop could be improved, and the handful of comments varied. Some were content-specific: more explanation, more practice, and more examples of Project Zero Thinking Routines. Others were the delivery of the content: the pace was too slow, too much time was spent on collaboration, and not enough time was available for the Learning Lab.

Workshop 2: Some participants wrote that more specific instruction would improve the facilitation of the workshop. They wanted more help navigating the Smithsonian Learning Lab and creating collections, and more examples of how to integrate digital resources and the Thinking Routines into the classroom. One participant wanted more examples specifically from educators in their region in Southwest Pennsylvania.

Workshop 3: Three participants provided feedback. One commented on the location itself – “lots of mechanical equipment noise and little kids eating lunch in the cafeteria area just beyond our doors.” The other two asked for more in-depth explanations and more collaboration between teachers in the same grade level / content area respectively.

Workshop 4: When offered an opportunity to make concluding remarks about the program overall, the majority of participants gave thanks and praised the program. Some commented on their favorite highlights: the Children’s Museum, Project Zero Thinking Routines in general, collaborating with colleagues, working with the facilitators, and learning about all the resources available. One participant said that the experience provided “very valuable learning that will stay with me for years.”



### *Interview Results: Teachers at the Workshop*

Only a couple of recommendations came out of the interviews with the 10 teachers:

- "...it would be cool, if there was a calendar and a cool image of the day."
- Obviously if we had more time to create a unit or theme-based thing on whatever it is, that would be lovely. I see that as a summer time workshop thing that could be done, and then try it out in class and see how it goes.

### Other Comments

#### *Interview Results: Teacher-Fellows*

##### **Question: Any other comments you would like to make?**

Some Teacher-Fellows took the opportunity to reflect on their experience. Overall, they found it incredibly valuable, specifically citing the collaboration, coming to D.C., and learning how to use new tools and techniques.

Some interviewees noted lingering questions:

"Right now they [the videographer] did the video, and I guess they are going to send it to you guys [SCLDA]. Are you guys going to link it to the Smithsonian Lab site or put it into the actual collections?"

"Where does this [interview] go? Was this going to be printed and put on the website?"

"When are we coming back? When is the band getting back together?"