



Yale-New Haven Teachers Institute

Teachers Institute Curriculum Units: Key to Teacher and Student Learning, 2018

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Twin Peaks Partners, LLC
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School districts, in partnership with one or more universities and colleges, form Teachers Institutes that offer seminars led by faculty on topics that teachers have identified as important to their work. The seminar schedules vary across Institutes, but typically seminars meet weekly over a period of several months. In the seminars, the faculty seminar leader guides participating teachers (Fellows) in learning about the seminar topic, and the Fellows develop curriculum units on some aspect of the topic. Their school's principal has agreed that they can implement the unit they develop in the coming school year. The curriculum units are also published online and available for other teachers to use. In recognition of the time and effort they put into their work in the Institute, seminar leaders receive compensation, and Fellows receive a stipend and University privileges during the year of their participation.

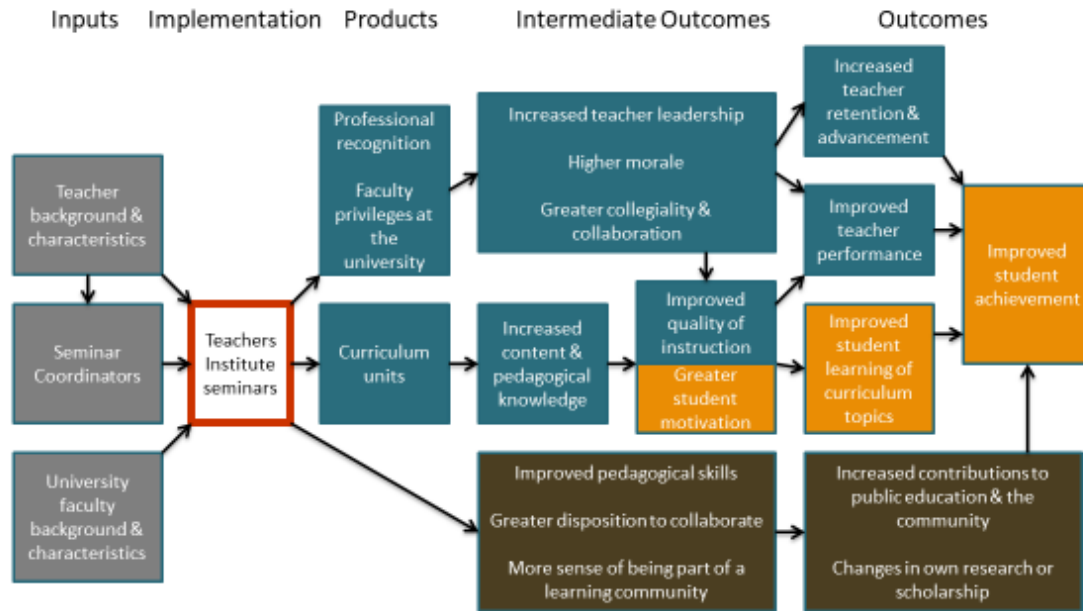
The theory of change underlying the Teachers Institute approach, based on research, shows multiple expected pathways to improved teaching and student learning (Kisker 2011). For teachers, seminar participation is expected to increase content and pedagogical knowledge, as well as research and communication skills, all improvements that are expected to enhance the quality of instruction. For students, teachers' increased knowledge and improved instruction are expected to lead to greater engagement in learning. Ultimately, these outcomes are expected to enhance student learning of curriculum unit topics, as well as to increase teacher retention, advancement, and performance (as assessed in school district teacher evaluation systems). All of these outcomes are expected to converge to support higher student achievement.

Curriculum units play a central role in the Teachers Institute theory of change. Writing a curriculum unit is key to increasing the teacher's content knowledge and provides a way for the teacher to put into practice in the classroom some part of what he/she learned in the seminar. Moreover, increased knowledge, along with the planning, research, and preparation that went into writing the unit, is expected to increase the teacher's confidence in teaching the topic and the quality of his/her instruction.

Writing a curriculum unit involves several tasks: learning about the seminar topic, conducting research on an aspect of the topic, translating the research into sound pedagogy, and communicating the research effectively (Casarella 1988). Writing a curriculum unit is expected to improve teachers' research methods, sharpen their writing abilities, and provide practice in organizing and refining ideas, all skills that teachers can use in preparing and using curriculum on other topics (Yale-New Haven Teachers Institute 1992; Smith 2004).

Interactions with other Fellows during the writing process support Fellows in developing their curriculum unit. Other seminar participants may help Fellows adapt material for their students, suggest teaching and learning strategies, and offer feedback on Fellows' initial ideas for their units.

Teachers Institute Theory of Change



Curriculum units extend the potential effects of the Teachers Institute approach on teaching and student learning. Because the units are published, they can be used by other teachers, who can implement or adapt the units, use the content to bolster their own knowledge, or use the teaching strategies to present their own content.¹

This report focuses on the curriculum units themselves—the process of developing them and the features of the completed units. A companion report discusses how and to what extent curriculum units are used by the Fellows who developed them and by other teachers.

Methodology

The study of curriculum units focuses on units completed in 2014 and 2015 in three Teachers Institutes (Yale-New Haven Teachers Institute, Delaware Teachers Institute² and Teachers Institute of Philadelphia) and the Yale National Initiative. Focusing on recent years rather than a longer period of time made it possible to maximize alignment of data from different sources. Including two years rather than one year

¹ Originally, in New Haven the curriculum units were used by their authors but not disseminated widely for use by other teachers. In early studies of unit use, however, Fellows in New Haven and the other teachers with whom they shared their units reported that Institute units compared favorably with other curriculum materials available to them. As a result, the Yale-New Haven Teachers Institute began making printed units available more widely in district schools. Later, the units written in New Haven and the other Teachers Institutes were published electronically on Institute Web sites.

² The Delaware Teachers Institute program concludes with curriculum units due in January of each year. For purposes of the research, the Delaware units are those largely completed in that year and submitted in January of the following year.

of curriculum units lessened any influence of units created in individual seminars that may not have been typical.

The study draws on multiple data sources, reflecting different perspectives on curriculum units: (1) online questionnaires completed by Fellows at the end of the program; (2) a systematic review of curriculum units; and (3) focus groups. The first two sources focused on Fellows and units from all programs, while the focus groups were conducted in only one program (in New Haven, CT). These data sources are described in more detail below.

End-of-Program Fellow Questionnaire

Data on all curriculum units written in the three Teachers Institutes and the Yale National Initiative in 2014 and 2015³ were obtained from online questionnaires administered to Fellows using Qualtrics at the end of their seminars. Completing the end-of-program questionnaire was required in order for Fellows to receive their stipend, so response rates were 100% among teachers who completed the program. The questionnaires included questions for all Fellows about their experiences during the program that was ending, the curriculum unit they just completed, and their plans for implementing it, as well as questions for Fellows who had participated before about their use of the unit they created in their most recent previous seminar.

Number of Fellows Who Completed Questionnaires at the End of 2014 and 2015 Seminars

Program	2014		2015	
	All	Returning	All	Returning
Delaware Teachers Institute	52	21	53	28
Yale-New Haven Teachers Institute	44	27	31	20
Teachers Institute of Philadelphia	46	29	41	26
Yale National Initiative	57	32	62	23
Total	199	109	187	97

Systematic Review of Curriculum Units

Systematic reviews of a stratified random sample of curriculum units written in the three Teachers Institutes and the Yale National Initiative in 2014 and 2015 provided detailed data on the features of curriculum units. A random sample of 125 curriculum units (about one third of all units written in those years) was selected after stratifying units by seminar, then stratifying units within each seminar by whether they were written by a veteran (returning) Fellow or a new (first-time) Fellow.⁴ The sample includes two to five units from each seminar completed in 2014 and 2015 (a list of the seminars and the number of units selected from each seminar can be found in Appendix A).

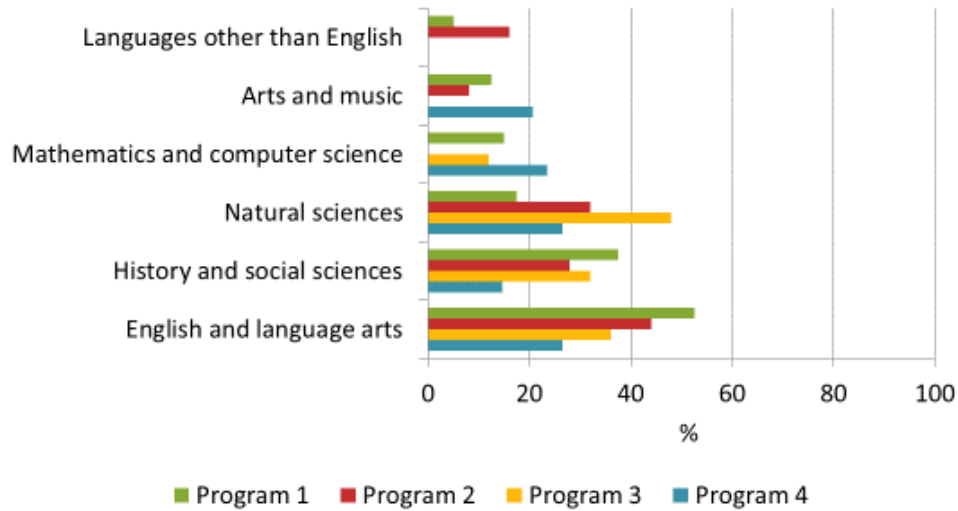
Reflecting the range of seminar subjects offered and their availability to teachers at all levels, the curriculum units reviewed cover topics in all core subject areas and target students in all grade levels. Approximately 40% of the sampled curriculum units address topics in the English and language arts area, 29% address topics in the natural sciences, and 28% address topics in the history and social sciences area. Smaller proportions of the units address topics in other areas. A few units are cross-disciplinary and address topics in multiple areas. The majority of units in the sample (58%) target students in

³ These years correspond to the years in which the curriculum units included in the systematic review were written. In the separate report on curriculum unit use, 2015 and 2016 Fellow Questionnaire data are used, because the questions on use of previous units refer back to prior years.

⁴ One curriculum unit selected into the sample was never posted online and could not be reviewed. Therefore, the number of curriculum unit reviews available for analysis was 124 units.

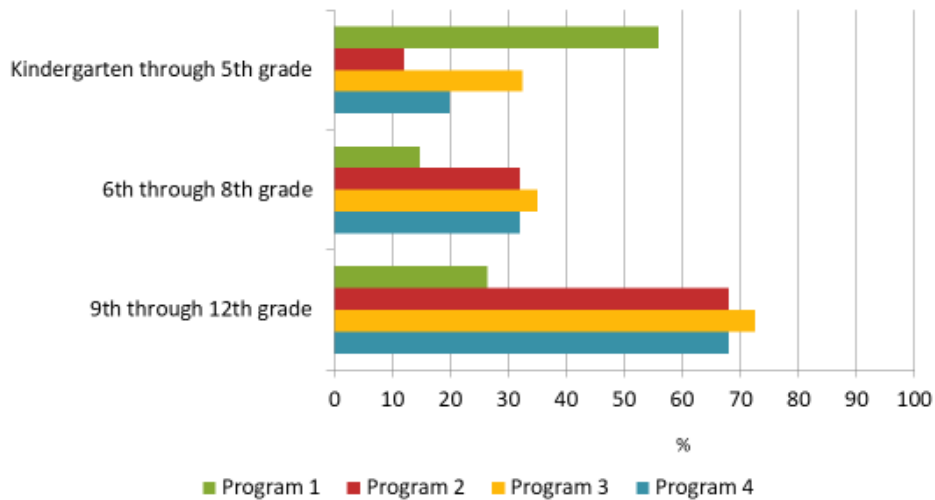
secondary grades, but nearly one third target students in elementary grades and more than one quarter target students in the middle grades.

Subject Areas Addressed in 2014 and 2015 Curriculum Units



Source: 2014 and 2015 curriculum unit reviews
 Note: Percentages may sum to greater than 100% because teachers may write units that address multiple subject areas.

Grade Levels Targeted in 2014 and 2015 Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

The overall distribution of curriculum units reviewed across subject areas and grade levels masks considerable variation across the four programs. For example, the percentage of units that address topics in English and language arts ranges from 26% to 53% across programs, and the percentage of units addressing topics in mathematics or computer science ranges from 0% to 24%. Similarly, the percentage of units that target elementary grade students ranges from 12% to 56% across programs, and the percentage of units that target secondary grade students ranges from 26% to 73%.

A rubric was developed to guide the review of each selected curriculum unit (see Appendix B). The rubric was designed to capture the presence of (1) unit elements required in the Curriculum Unit Guidelines (summarized in the next section); (2) classroom practices and learning activities explicitly discussed, with a focus on practices and activities to encourage deeper learning; and (3) other supportive elements commonly found in units. At the end of the rubric, reviewers (all of whom were teachers) were asked to rate the quality of writing and the usability of the curriculum unit by another teacher, and they had an opportunity to identify curriculum units that they found to be exemplary.

The list of classroom practices and student learning activities included in the rubric was informed by policy discussions of what students need to know and be able to do to be successful in work and life in the 21st century (William and Flora Hewlett Foundation 2013; Partnership for 21st Century Skills 2009). Along with deeper content knowledge and the ability to apply that knowledge to real-world situations, students need self-management and interpersonal skills that enable them to take initiative, think critically and creatively, persevere in the face of challenges, work collaboratively to solve problems, and communicate ideas.

Classroom practices and learning activities for developing these competencies were considered for the rubric. To facilitate comparisons with past data, the practices and activities in the rubric also include some that were examined in past studies of Yale-New Haven Teachers Institute curriculum units (Casarella 1988) and annual Fellow questionnaires. Additional practices and activities mentioned in William and Flora Hewlett Foundation (2013) and Partnership for 21st Century Skills (2009) were added to the list. The classroom practices and learning activities in the rubric were refined during pilot testing by editing descriptions of practices and activities to make them clearer and adding practices and activities found in the units that were not already included in the list. Appendix C shows how the practices and activities in the rubric fit into the dimensions of deeper learning identified by the William and Flora Hewlett Foundation (2013).

Reviewers looked for a wide range of classroom practices and learning activities in the units. It is important to keep in mind, however, that the deeper learning framework defines competencies that students need to develop in all of their classes over time in preparation for college and work. No single curriculum unit can address every competency thoroughly, nor can it include a large number of the practices and activities examined.

The unit reviewers included teachers who had been Fellows and one teacher who had never participated in a Teachers Institute or Yale National Initiative seminar.⁵ Prior to reviewing curriculum units for the study, the reviewers received training on the rubric and were certified to complete unit reviews.⁶

⁵ Experience during the pilot testing of the rubric suggested that reviewers who were teachers familiar with the Teachers Institute approach and well-suited to the detail-oriented nature of the review task were better able to identify some elements in the curriculum units.

⁶ Reviewers were required to participate in a training session with the study director and complete a practice review in which the reviewer's rubric was consistent with the study director's rubric on at least 85% of the items. Some reviewers met this criterion on their first practice unit, and others met it on their second practice unit.

Two reviewers reviewed each unit independently using the rubric.⁷ After completing their rubrics independently, reviewers compared their completed rubrics and reconciled any differences by discussing them and reaching consensus on how to resolve any differences.⁸

To obtain another perspective on the curriculum units, a small subsample of 20 curriculum units was selected randomly for review by former seminar leaders.⁹ The seminar leaders were asked to read each unit in the subsample and rate and comment on how well-written the unit is and the accuracy of the content of the unit. Seminar leader reviewers also had an opportunity to identify units they felt were exemplary. Most of the sampled curriculum units were reviewed by two seminar leaders; their ratings were very similar.

Focus Groups

The quantitative data from end-of-program Fellow questionnaires and the systematic review of curriculum units were supplemented with qualitative data collected in focus groups with Yale-New Haven Teachers Institute Fellows and other New Haven teachers. Three groups were formed: (1) experienced Fellows, who had participated one or more times at least five years ago; (2) newer Fellows, who first participated in the Teachers Institute within the last five years; and (3) other teachers who were not Fellows. Teachers in the Yale-New Haven Teachers Institute leadership helped identify and recruit potential focus group participants, without discussing the study or the questions that the discussions would address.

Eight to 10 teachers participated in each group discussion. A total of 28 teachers from 16 schools attended the focus groups.

A professional focus group moderator led each discussion using a discussion guide to ensure that each discussion addressed the topics on which information was sought. The teachers who attended received a \$100 amazon.com gift card in appreciation for their time.

A diverse group of teachers attended the focus groups. Fifteen focus group participants were high school teachers, and 13 were elementary and middle grade teachers. Eight participants were teaching in the English and language arts area, 11 were teaching in the science or math areas, and nine were teaching in other subject areas or were elementary teachers who were teaching in all subject areas. Participants' experience ranged from 3 to 41 years in teaching. Although the focus group participants are not statistically representative of any larger group of teachers, their diversity suggests that a wide range of experiences and viewpoints informed the discussions.

The discussions were audiotaped, and transcripts of the discussions were analyzed to identify themes and quotes to illustrate them. Qualitative analysis software was used to analyze the transcripts.

Data Analyses

Descriptive analyses of these data, including means, frequencies, and cross-tabulations, were conducted. These analyses were conducted for the full sample and for key subgroups, including those defined by Institute, grade level taught, subject area taught (STEM vs. other subjects), and whether or

⁷ Units were assigned to avoid having Fellows review units by their colleagues in a local Teachers Institute or the Yale National Initiative. Reviewers were blind to the author of the unit and the program in which the unit was written.

⁸ The study director ensured that reviewers were completing the rubric consistently by serving as the second reviewer on some reviews and reviewing a portion of the reconciled reviews by reviewer pairs.

⁹ Seminar leaders were blind to the author of the unit and the program in which it was written. Seminar leaders were not assigned any units written in their seminar. Seminar leaders in STEM subjects reviewed units on STEM topics, and seminar leaders in the humanities reviewed units on other topics.

not the Fellow had participated in an Institute seminar before. Differences among these subgroups are reported when they are statistically significant.

Guidelines Specify Curriculum Unit Structure and Schedule

Curriculum Unit Guidelines define the required elements of the curriculum units and guide the writing process. In each program, the Guidelines are accompanied by mechanical specifications for formatting the final unit for publication. The Teachers Institute approach emphasizes increasing teachers' content knowledge and the skills to teach the content. Thus, the Curriculum Unit Guidelines focus on subject matter and teaching strategies. They require more description and analysis of a content area than teachers are usually expected to include in curriculum they write (Fry 2011). Also, because program leaders view the curriculum unit writing process as key to increasing content knowledge and improving teaching skills, the Guidelines define a process in which units are developed in stages over time with comments from seminar leaders and other Fellows. Writing the units in stages also makes their completion more manageable for many Fellows.

The Curriculum Unit Guidelines set limits on the curriculum units to keep the scope of work manageable. The Guidelines require authors to include only a few examples of teaching methods or lesson plans, and they do not require authors to provide complete lesson plans. Such an expectation would detract from the focus on enhancing content knowledge. In addition, the Guidelines place a word limit on curriculum units and limit printed copies of units to 25 single-spaced pages. As a result, the curriculum units written in the Teachers Institutes and Yale National Initiative are not structured like commercial curriculum units.

The Curriculum Unit Guidelines vary slightly across programs, but they all require the same core elements. The Yale-New Haven Teachers Institute and Yale National Initiative Curriculum Unit Guidelines specify that a curriculum unit should contain five elements:

1. Content objectives (a clear statement of the subject matter that the unit seeks to cover)
2. Teaching strategies (a unified, coherent teaching plan for those objectives)
3. Classroom activities (three or more detailed examples of actual teaching methods or lesson plans)
4. Resources (three annotated lists of materials: a teacher bibliography, a list of materials for classroom use, and a student reading list)
5. Appendix (an explanation of how the unit implements certain academic standards of the school district)

The Delaware Teachers Institute requires the same five elements plus a Learning Focused Template summarizing key questions and concepts covered in the unit, as required by the state Department of Education.

The Teachers Institute of Philadelphia Curriculum Unit Guidelines specify that in addition to an index, units should include the following elements, which are similar to those required by the other Institutes:

1. Overview (a narrative description of the unit that is comparable to a synopsis)
2. Rationale (a narrative that describes the writer's reasons for creating the unit, background content needed for the unit, and how the unit fits into the existing curriculum)

3. Objectives (a narrative description of what the unit seeks to achieve, expressed in behavioral terms, and a statement of how the standards for student achievement will be incorporated into the unit)
4. Strategies (a narrative description of a variety of ways the curriculum writer will achieve the expressed objectives and assist students to reach the prescribed standards)
5. Classroom Activities (a narrative, consisting of a more detailed description of classroom activities, either specific examples of teaching methods or two actual lesson plans in narrative form)
6. Annotated Bibliographies/Works Cited/Resources (this section should include an annotated bibliography for teachers, an annotated reading list for students, and an annotated list of materials for classroom use)
7. Appendix/Content Standards (the appendix may include worksheets, diagrams, charts or pictures used in the teaching of the unit. A list of content standards addressed in the unit will also be included here)

Except in Philadelphia, the Guidelines indicate that a narrative discussion of content objectives and teaching strategies should comprise at least two thirds of the unit. Beyond that, unit authors determine how best to carry out the objectives of the unit.

The programs provide additional support for writing curriculum units that meet the Guidelines. They offer sessions in which experienced Fellows explain the Guidelines and discuss how they approach writing a curriculum unit. Seminar Coordinators, who are experienced Fellows participating in the seminars, provide ongoing support to Fellows writing units.

Fellows appreciate the value of the Curriculum Unit Guidelines and the required curriculum writing process. At the end of their seminar, most Fellows acknowledge the usefulness of the Guidelines. On average across the four programs and two years, more than half of Fellows (55%) described the Guidelines as useful to a great extent. Most of the remaining Fellows reported that the Guidelines were useful to a moderate extent.

A few Fellows who participated in focus groups noted some frustration with the Guidelines and mechanical specifications for the units, suggesting the nature of concerns leading some Fellows to rate the Guidelines as less than useful to a great extent. One Fellow reported that the required format is so different from what he/she finds useful that the Fellow pulls the unit apart afterward and reorganizes it into a format that makes sense to him/her. A few Fellows felt that they were writing a research paper rather than a curriculum unit. Several Fellows suggested that the units could be made more user-friendly for other teachers if the specifications allowed Fellows to include attachments and links to internet resources.¹⁰

To encourage Fellows to move forward with the work and improve their units with feedback from the seminar leader and colleagues in their seminar, the Guidelines provide a schedule of deadlines for a prospectus, first draft, second draft, and completed unit. The schedule also specifies deadlines for seminar leaders to provide comments (except in Philadelphia).

¹⁰ The programs do not allow live internet links because the units remain online indefinitely, and many links would stop working over time.

The deadlines for curriculum units pose a challenge for some Fellows. The program schedules in general appear to meet the needs of most participating teachers.¹¹ On average, 86% of Fellows report that the program schedule is useful to a moderate or great extent. On average, nearly one quarter of Fellows, however, agreed that unit deadlines occur at the wrong time in the school calendar. Fellows in the two programs that meet in the spring and conclude in early or middle summer were substantially more likely to agree that unit deadlines occur at the wrong time in the school year. In one of these programs, the deadline for the second draft of the unit falls near the end of the school year, and in the other program, the final unit deadline falls shortly after the end of the school year.

The Curriculum Writing Process Strengthens Learning and Teaching

Seminar leaders play a key role in the curriculum writing process. They guide Fellows in learning about the seminar topic, and they are available to answer questions, make suggestions, encourage progress, and provide feedback on curriculum units in progress. They meet individually with each Fellow in their seminar and provide written comments on the prospectus and first and second drafts of each participant's curriculum unit.

My seminar leader...far exceeded my expectations. He was dedicated, informed, resourceful, helpful, yet gracious in his editing and feedback, and still, quite simply, an exceptional teacher. (2015 Delaware Fellow)

Fellows consistently report receiving support from their seminar leader. On average across the four programs and two years, three quarters of Fellows agreed at the end of the program that their seminar leader was useful to a great extent, and most of the remaining Fellows reported that their seminar leader was useful to a moderate extent. With the exception of one program, at least 75% of Fellows agreed that they received enough guidance from their seminar leader, and more than 80% agreed that they received helpful feedback from their seminar leader on their draft curriculum unit.

In narrative comments they included in their end-of-program questionnaire, many Fellows describe specific ways in which their seminar leader supported them in writing a curriculum unit. The comments show that sometimes seminar leaders suggest new directions or ways to approach the topic of the unit that help authors deepen their understanding and find more innovative ways to present the topic to their students.

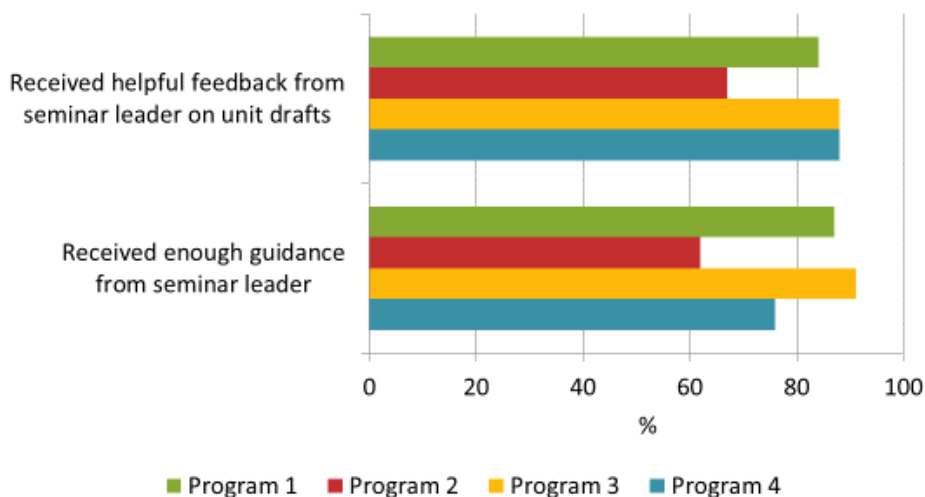
“The most valuable thing to me was the time spent one on one with the seminar leader. He was such an incredible resource and I learned so much from him.”

“The professor was excellent. He provided very informative readings and lectures, and did his best to generate class discussions. He also advised me on my curriculum [unit] by offering many resources, insight, and feedback, which was incredibly helpful.”

“Also valuable was learning from the seminar leader. It was exciting to come each week and see what he had prepared for us. My research took me in a direction that I would not have gone if I had not had this opportunity.”

¹¹ Program schedules vary across Institutes. In one Institute, the seminars begin in January and conclude in early June, right at the end of the school year. In another Institute, seminars begin in March and continue through mid-July, with units due at the end of July. Another Institute convenes seminar meetings in late spring, breaks for the summer, resumes meetings in the fall, and concludes in January. The National Initiative convenes seminar meetings in May and during a two-week Intensive Session in July, and concludes in August.

Seminar Leader Support of Fellows



Source: 2014 and 2015 Fellow Questionnaires

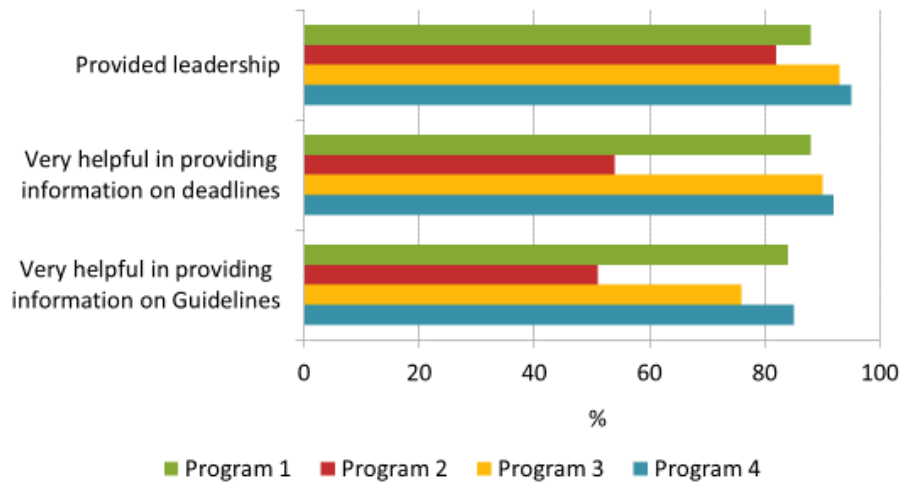
“I felt myself getting inspired just by the way my seminar leader was so passionate and engaging when he was leading our discussions. I just straight up stole one of his points for reading Shakespeare’s poetry and sonnets. The question he asked us for framing up these pieces of writing, if this is a speaker, what is it in response to? What was said right before this? It kind of re-framed for me a way of teaching poetry, and I brought that into my classroom. It wasn’t from my curriculum unit, but being in that seminar inspired me by seeing someone else’s teaching methods. It was helpful, and my kids responded to it.”

Seminar Coordinators, who are experienced Fellows participating in the seminars, help Fellows adhere to the Curriculum Unit Guidelines. They work closely with the seminar leader on administrative aspects of the seminar, help establish collegiality, serve as a resource for Fellows in the seminar, and monitor progress on curriculum units. On average across programs and years, nearly two thirds of Fellows agreed strongly that their seminar’s Coordinator provided leadership. One Fellow in a focus group said:

“The accountability and the coordinator were helpful. The coordinator would call and check up on you and support you. They would answer any questions you had, and they were very helpful.”

The seminar structure encourages collegiality and learning from professional colleagues, including the other school teachers and seminar leaders. While writing their units, Fellows benefit from the support of other Fellows in the seminars who share ideas and provide feedback on the units in progress. After their seminar, most Fellows report that their interactions with other Fellows were useful to a great extent. Nearly all the remaining Fellows reported they were useful to a moderate extent. A small proportion of Fellows in each of the programs, however, felt at the end of their seminar that there was too little discussion of units in their seminar. A Fellow in the focus groups commented:

Seminar Coordinator Support of Fellows



Source: 2014 and 2015 Fellow Questionnaires

“You get that information, and you’re working with colleagues. We all work together; we give each other ideas. That collaboration helps you break it down to smaller parts; you don’t have that opportunity in any other forum.”

The curriculum unit writing process deepens teachers’ content learning and increases their confidence in teaching the topic. Writing a curriculum unit requires Fellows to understand the topic well enough to write a summary of the topic and to figure out how to teach it. Nearly all Fellows in 2014 and 2015 agreed that their seminar provided useful knowledge or information and that they gained knowledge of the seminar subject. In the focus groups, several experienced Fellows explained how they gained from their seminar and writing their curriculum unit:

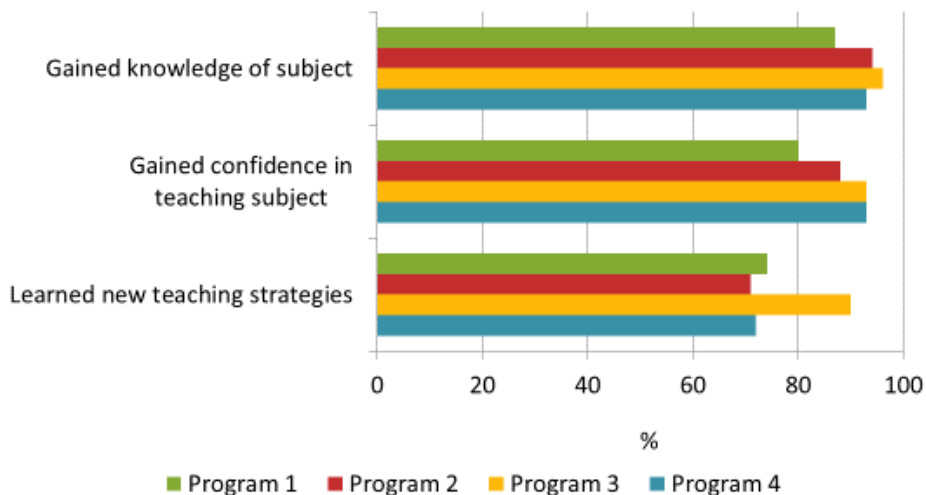
“...had I not written the unit, I would not have remembered like half of the content. But because I did, I know it.”

“My unit was going to be on the anatomy of the eye to add more comprehension to an existing science kit that we got. But, once I actually had to write the unit, I had to put a different twist on it, and I had to assimilate it. And, I ended up with a far more rich understanding of light and color as a result.”

“One of the things the Institute did for me, it helped my teaching, and I was able to learn from them. It made me more willing to try new things and implement them in the classroom. That has made me a more effective teacher.”

The planning and preparation required to write a curriculum unit, along with the deeper content knowledge they acquire, gives Fellows confidence in teaching the unit. Most Fellows in 2014 and 2015 agreed that they gained confidence in teaching the seminar subject.

Knowledge and Confidence Gains by Fellows



Source: 2014 and 2015 Fellow Questionnaires

Participating in the seminar and writing their curriculum units also helped Fellows in 2014 and 2015 focus on their teaching. Most Fellows agreed that their seminar participation and curriculum writing gave them opportunities to work on their teaching (86%), made them pay closer attention to their teaching (75%), and led them to think about teaching in a new way (87%). More than three quarters (77%) reported that they learned new teaching strategies.

Most Curriculum Units Meet the Requirements of the Guidelines

Adherence to the Curriculum Unit Guidelines is high. Reviewers of curriculum units found evidence that elements required by the Guidelines were present in most, though not all, of the units reviewed.

In most of the sampled units (93%), reviewers found the required content objectives (a clear summary of the subject of the unit and the author's thematic approach to it). The units that do not meet this criterion either do not include a summary or the summary is not clear. Curriculum units on STEM topics are less likely than units on other topics to include a clear summary of the unit content (86% vs. 96%).

Reviewers found that three quarters of sampled units (76%) contain teaching strategies (a unified, coherent teaching framework or plan). They were less likely to find a coherent plan in units targeting middle grade students than in units targeting older and younger students (53% vs. 74% to 94%).

The Curriculum Unit Guidelines note that the audience for the curriculum units is other teachers, and Fellows write their units to support their use by another teacher. Slightly more than three quarters (78%) of the sampled units include background material that reviewers deemed sufficiently clear and complete to enable another teacher to understand the subject of the unit and teach it.

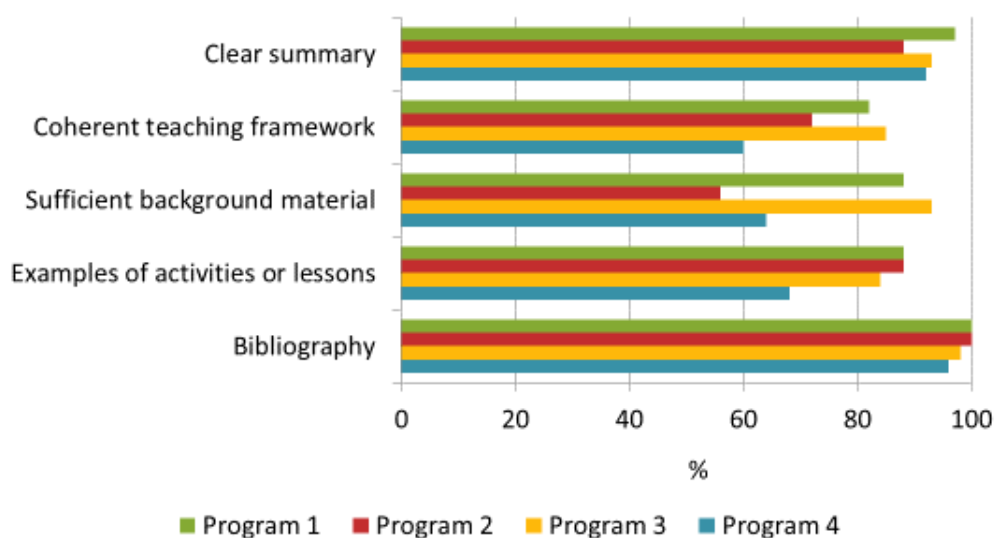
Most (81%) of the sampled units include the required examples of activities or lesson plans. Often, the number of examples or lesson plans provided exceeds the minimum of three examples required by the Guidelines (41% of the sampled curriculum units contain more than three examples).

Virtually all of the sampled units include a teacher bibliography; less than half, however, include a list of materials for classroom use or a student reading list. In some cases, the omission of lists of materials for classroom use and student reading lists reflects the nature of the unit topic, the grade levels of students for whom the unit is designed, and planned activities.

Nearly all units identify the standards addressed in the unit (95%), and many go further to describe how the unit fits with the district curriculum. Most often the standards addressed are Common Core State Standards (CCSS), but about half of the units identify other state or national standards that are addressed.¹²

About two fifths of the units say something about how the unit fits into the district curriculum. Some describe how the content of the unit fits with the curriculum, while others focus on the unit’s fit with the school’s teaching approaches or ways the unit extends the existing curriculum.

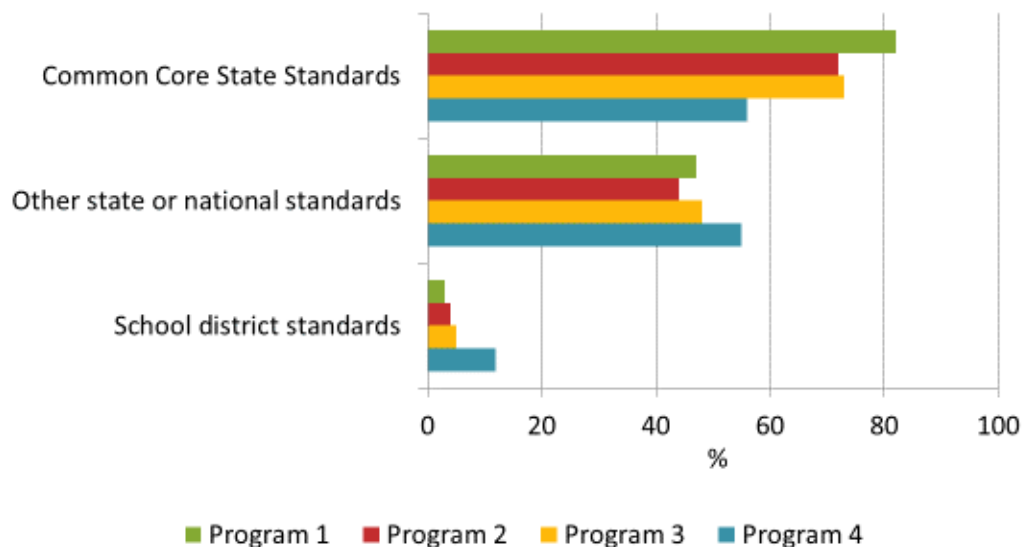
Presence of Key Elements in Institute Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

¹² Not all states where Fellows teach have adopted the CCSS, and not all Fellows teach subjects that are addressed in the CCSS.

Standards Addressed in Institute Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

Many Units Contain Other Supporting Elements

Many curriculum units contain elements that are not required by the Guidelines but would likely help other teachers implement the unit. These supporting elements include descriptions of the classes or students for whom the unit was designed, discussions of specific aspects of unit implementation, and information to help other teachers implement the unit.

Other teachers considering curriculum units written by Fellows need to assess whether the units address the knowledge and skills they need to teach and whether the units are appropriate for their students. Most units identify the student skills to be taught (85%) and what students are expected to learn during the unit (94%).

Just under half (46%) of the units reviewed contain a description of the type of class for which the author designed the unit. The descriptions usually focus on the school context of the class, the types of students in the class, or the organization of the class.

A higher proportion of units (80%) describe the students to whom the author plans to teach the unit. These descriptions often include the demographics of students in the author's school or classroom and sometimes mention students' abilities or challenges. For example, units contain descriptions of students such as:

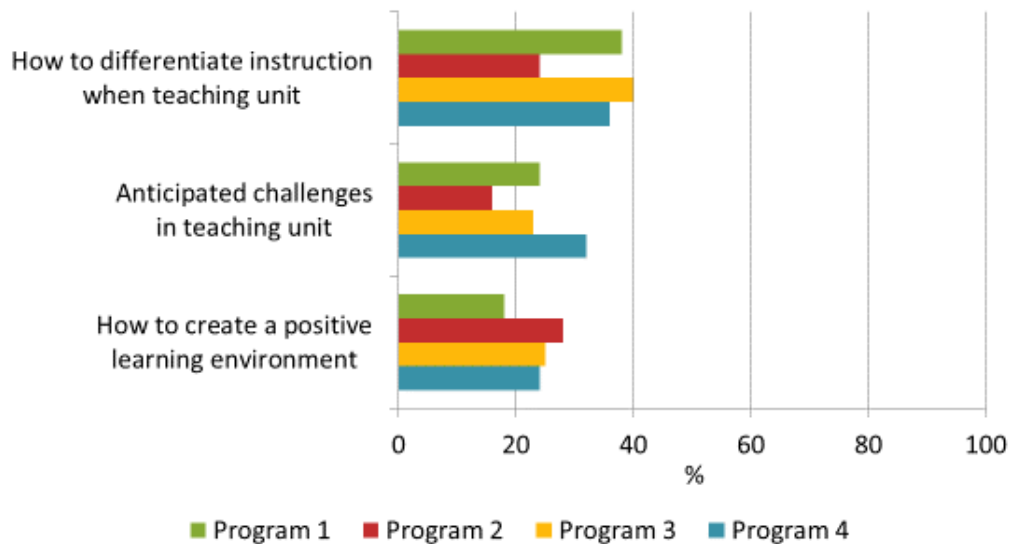
“Students are mostly African American and Hispanic, many from families that struggle financially. Many are immigrants or students who transfer from the suburbs. All are natives to instant communications and almost all carry smart devices in their pockets.”

“98% of students in the school qualify for free or reduced-price lunch; 95% African American, 4.6% Hispanic. A substantial number of families are displaced. The school is in a high crime area. Students face gang violence, single parent homes, and living in poverty every day. Most parents do not see the value of voting and have a sense of hopelessness.”

Some unit authors discuss implementation of the unit in more depth. They discuss differentiation (35%), how to create a positive learning environment (23%), or how to address anticipated challenges in teaching the unit (23%). Among the ways that units suggested creating a positive learning environment, for example, were establishing norms for discussion, communicating an attitude of inclusiveness after watching a film, providing ways for anxious students to participate digitally, and encouraging openness to turning criticism, awkwardness or nervousness around material into factual observations not biased by our own experiences and preconceptions. Anticipated challenges included truancy, which made it important for components of the unit to stand alone.

Some Fellows have a clear idea about how much time and over what period they will implement their unit, and they describe that plan in their unit. In one third (34%) of the sampled units it is clear in how many lessons (in total) the author intended to teach the unit. A similar proportion of sampled units describe the period over with the author expected to teach the unit (38%) or the pacing of lessons (31%).

Presence of Implementation Information in Institute Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

Curriculum Units Contain Classroom Practices and Learning Activities to Promote Deeper Learning Competencies

In describing teaching strategies (defined in the Guidelines as the teaching framework or plan) and providing examples of classroom activities or lesson plans, curriculum unit authors identify specific classroom practices and learning activities they plan to use in teaching the subject matter of their unit. Because the Curriculum Unit Guidelines emphasize the subject matter and approach to teaching and require only three examples of lesson plans or classroom activities, the specific classroom practices and learning activities included explicitly in the unit usually do not necessarily include all practices and activities the unit author intends to implement. Instead, they illustrate key practices and activities that unit authors plan to use.

Thus, by design, the prevalence of specific teaching practices and learning activities found explicitly in the curriculum units represents the minimum extent of their planned use by Fellows. Not surprisingly, the extent to which Fellows in 2014 and 2015 reported including each specific activity and practice in their unit was often greater than the extent to which unit reviewers found the specific activity or practice discussed explicitly in the sampled curriculum units. Moreover, three quarters of Fellows reported at the end of their seminar that they planned to do more work on their unit. More than half of Fellows reported that they planned to add lesson plans or class activities (68%), add classroom materials (58%), or add teaching strategies (56%). Taken together, the unit reviews and Fellow reports on their own units confirm that the units alone do not present a complete picture of the teaching that unit authors plan to do.

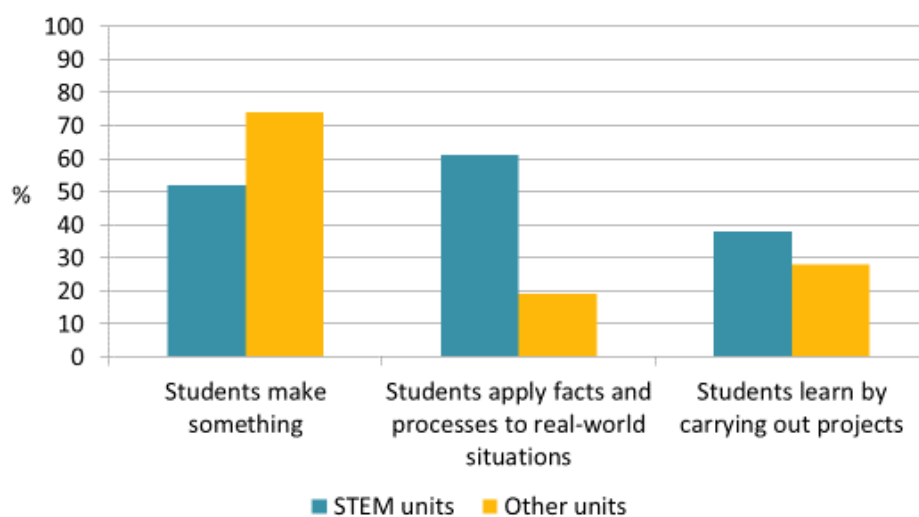
Mastery of core academic content

The specific classroom practices and learning activities to help students master core academic content focus on developing students' knowledge in an academic discipline and their ability to apply that knowledge in other situations. Many of the specific practices and activities identified in the sampled curriculum units focus on building content knowledge, providing opportunities to deepen that knowledge through discussion and by applying it to projects and real-world situations, and assessing students' understanding.

The curriculum unit review found that the most commonly included practices and activities to help students master the content of the unit are teacher-led discussion and lectures or presentations (79% and 60%, respectively). More than two fifths of the units explicitly discuss ways to differentiate instruction in unit activities (44%) and include teacher demonstration or modeling of tasks for students (43%). One fifth of the sampled units include teacher discussion with students about ideas and values guided by a text or structured questions. Units targeting secondary students are less likely than units targeting other grade levels to include teacher lectures or presentations (47% vs. 73% to 88%) but more likely to include discussions of ideas or values guided by a text or structured questions (29% vs. 9% to 12%).

Active learning strategies requiring students to apply what they are learning are also common in the units. Two thirds of units ask students to apply what they've learned to make something (66%). One third of the units ask students to apply facts and processes to real-world situations (34%) or encourage students to learn by doing projects (31%). Science, technology, engineering, and mathematics (STEM) units are less likely than units on other topics to include making something (52% vs. 74%), but they are more likely to ask students to apply facts and processes to real-world situations (61% vs. 19%). Units targeting secondary students are less likely than units targeting other grade levels to include making something (53% vs. 85% to 88%).

Application of Knowledge in Institute Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

Specific plans to assess learning are often included explicitly in the sampled curriculum units. One third of units discuss formative assessment to check understanding and adjust instruction (38%), and somewhat more include administering summative assessments or tests of student learning (44%). STEM units are less likely than units on other topics to include summative assessments or tests (25% vs. 54%).

A few of the curriculum units mention visiting resources outside of the classroom or inviting outside resources into the classroom, but these specific activities were less prevalent than other practices and activities to help students master unit content.

Ability to think critically and solve complex problems

Many of the specific classroom practices and learning activities examined using the rubric pertain to critical thinking and problem solving, and the ability to apply tools and techniques to formulate and solve problems.

More than half of the sampled units involve students in gathering needed data or information (60%) and analyzing and interpreting information and data (58%). Two fifths of the units ask students to do close reading or analyze a piece of writing (40%). One third of the units ask students to generate ideas and refine them (brainstorm) (35%). Fewer than one fifth of the units ask students to conduct experiments (15%), formulate problems and generate hypotheses (8%), or conduct case studies (5%).

Units written on STEM topics are more likely to ask students to formulate problems and generate hypotheses (20% vs. 1%), and conduct experiments (32% vs. 5%), and they are less likely than units on other topics to involve students in close reading or analyzing a piece of writing (25% vs. 49%).

Units targeting middle grade students are more likely than units targeting other grade levels to ask students to generate ideas and refine them (53% vs. 31% to 39%).

Ability to communicate effectively

Deeper learning involves not only acquiring knowledge and skills but also learning to communicate effectively. Most of the sampled curriculum units ask students to articulate their ideas in writing (84%), and many units ask students to make oral presentations (44%) or to present ideas in other ways (27%). Two thirds of curriculum units require students to share their work with other students or with the full class (66%). STEM units are less likely than units on other topics to ask students to articulate ideas in writing (68% vs. 93%).

Ability to work collaboratively

Learning to work collaboratively with others is also an important competency identified in the William and Flora Hewlett Foundation's deeper learning framework. Reflecting the importance of interpersonal relationships, most of the sampled curriculum units ask students to work collaboratively in small groups (82%).

Learning how to learn

A small proportion of the sampled curriculum units include opportunities for students to reflect on their learning experience (20%). Only a few units ask students to set goals and monitor their progress on tasks (2%). The incidence of these strategies documented in the unit reviews is substantially less than the incidence reported by Fellows at the end of their seminars, suggesting that although unit authors did not choose to highlight these kinds of activities in their curriculum units, they often planned to include these types of activities when teaching their unit.

Fellows report more use of active learning practices and activities in their Institute units

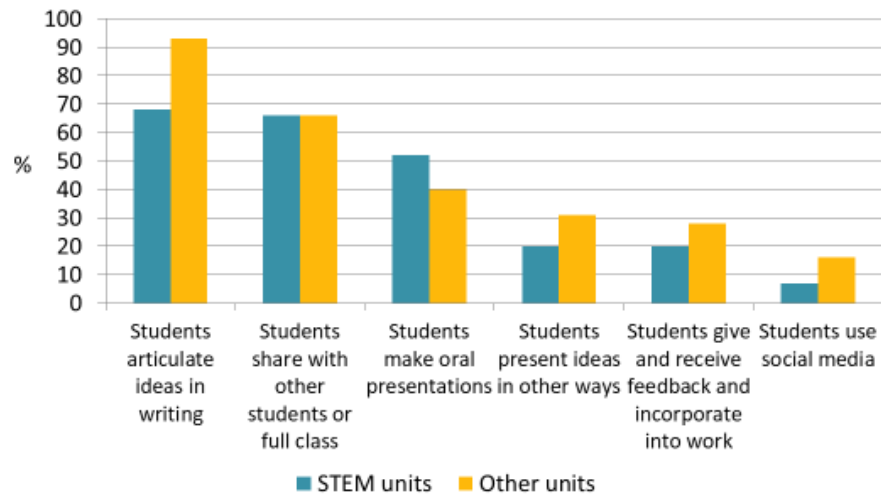
Fellows report more use of many active learning practices and activities in their Institute curriculum unit than in their teaching more generally. Across all four programs in 2015, for example, Fellows reported substantially more use in their Institute units of students generating and refining ideas, applying facts and processes to real situations, formulating problems and generating hypotheses, articulating ideas in writing, making oral presentations, giving and receiving feedback and incorporating it into their work, and reflecting on the learning process. In three of the programs, Fellows reported substantially more use in their Institute units of Socratic questioning of ideas, students making something, students presenting ideas in ways other than oral presentations, students setting goals and monitoring progress, and students gathering needed information and data.

Most Curriculum Units Are Written Clearly and Are Usable by Other Teachers

Teachers Institutes do not limit acceptance to teachers who are well-prepared in the subject of the seminar or experienced in writing curriculum. Instead, Institutes welcome teachers who are less well-prepared, because it is these teachers and their students who may benefit most from the program. As a result, program leaders expect that the quality of the units produced in the seminars to vary, and the unit reviews bear out this expectation.

According to reviewers, the majority of curriculum units written in Teachers Institutes and the National Initiative are clear, accurate, and usable by other teachers. Some units excel in these areas, and a few are exemplary. On the other hand, a small proportion of units are not clearly written or are not easily usable by another teacher.

Communication Activities in Institute Curriculum Units

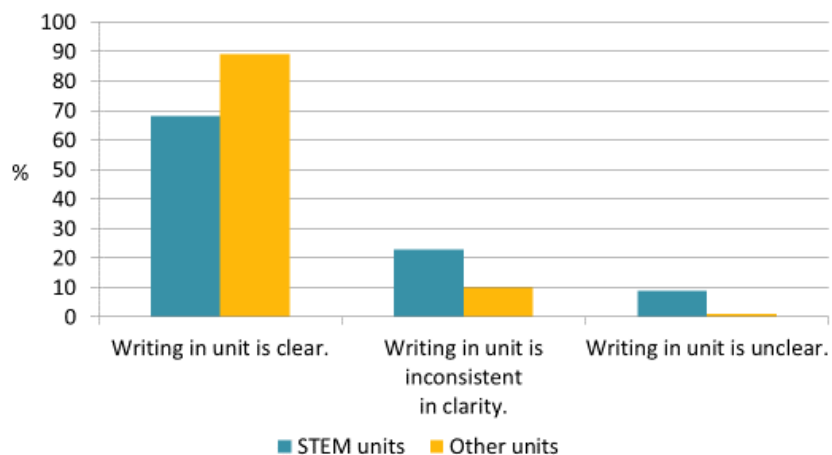


Source: 2014 and 2015 curriculum unit reviews

Clarity

Both teacher reviewers and seminar leader reviewers considered most units to be written clearly. Teacher reviewers determined that four fifths of the units are written clearly and the subject matter and teaching strategies could be understood by other teachers. One-fifth of the units, however, were judged to be inconsistent in clarity or difficult to understand overall. STEM units were less likely to be rated as clearly written and more likely than units in other subject areas to be considered inconsistent in clarity or unclear.

Clarity of Writing in Institute Curriculum Units



Source: 2014 and 2015 curriculum unit reviews

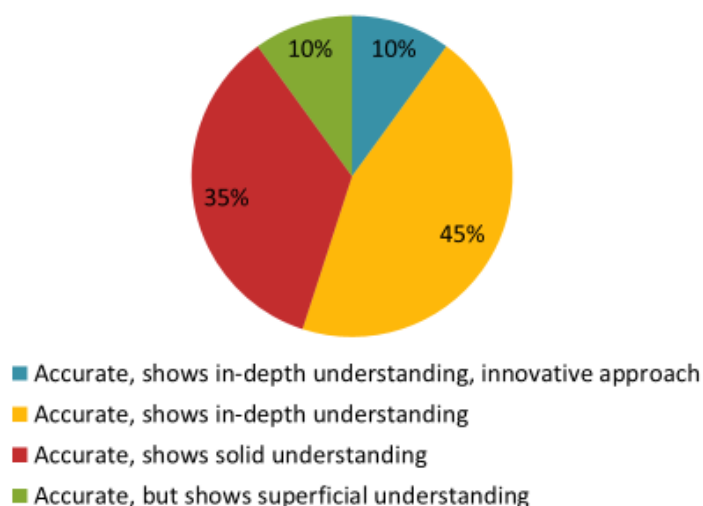
In the random subset of units that they reviewed, seminar leader reviewers determined that 60% were well-written and 40% were adequately written. No units were determined to be poorly written.

In the subset of units reviewed by both teacher and seminar leader reviewers, more than half received the highest rating from both groups of reviewers. 10% of the units received lower ratings from both groups. Most of the remaining units were rated lower by seminar leader reviewers than teacher reviewers.

Accuracy

Seminar leader reviewers found most units presented the content accurately. Among the random subset of units that they reviewed, the seminar leader reviewers indicated that the content of the units was accurate in all cases, but the depth of understanding demonstrated varied, with 35% showing a solid understanding of the topic and 45% demonstrating an in-depth understanding. 10% of the units went beyond that to take an innovative approach to the topic, and a similar proportion, on the other hand, demonstrated only a superficial understanding of the topic.

Accuracy of Content in Institute Curriculum Units

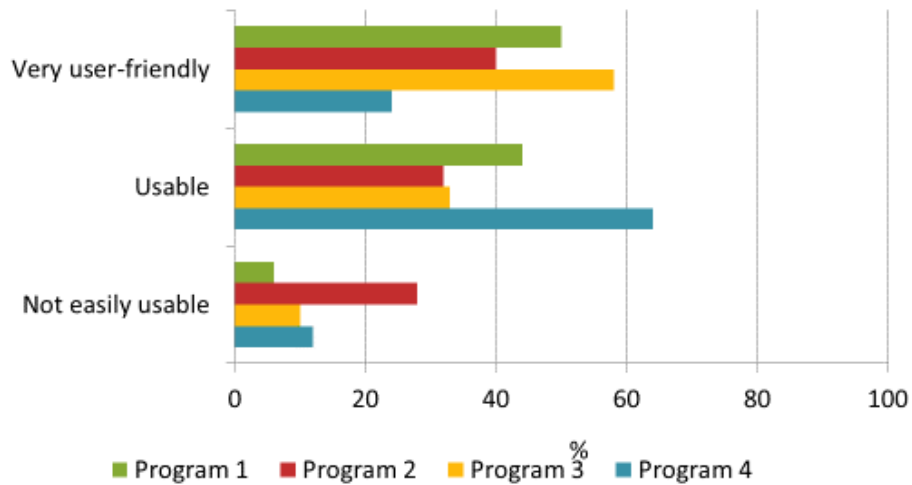


Source: 2014 and 2015 curriculum unit reviews (seminar leader reviews)

Usability

Teacher reviewers found most curriculum units to be usable by another teacher. Nearly half of the units reviewed were deemed very user-friendly, and nearly as many were considered usable by another teacher. The teacher reviewers considered 13% of the units, however, to be not easily usable by another teacher.

Usability of Institute Curriculum Units by Another Teacher



Source: 2014 and 2015 curriculum unit reviews

Both teacher reviewers and seminar leader reviewers identified a small proportion of units as exemplary. Teacher reviewers categorized 16% of the units in the full sample as exemplary. Nearly half of these units also received the highest ratings in both clarity and usability.

In the subsample of units they reviewed, seminar leader reviewers identified approximately 30% units as exemplary. Nearly half of the units rated by seminar leader reviewers as exemplary also received the highest ratings for clarity and accuracy from seminar leader reviewers.

In the subsample of curriculum units reviewed by both teacher and seminar leader reviewers, 30% of the units also were identified by teacher reviewers as exemplary. Only 15% of the units in the subsample, however, were rated as exemplary by both teacher and seminar leader reviewers.

Variations in Unit Features Tend to Reflect Differences in Grade Level and Subject Area

Although some variations exist, as noted above, the unit writing process and features of curriculum units are similar across programs, across STEM and other topics, and among veteran and new Fellows. Most differences are not statistically significant. Variations in unit features across programs appear to reflect, in part, differences in the grade levels targeted and subject areas addressed.

Units written on STEM and other subjects are most likely to differ. Units written on STEM topics are more likely to include some teaching practices and learning activities and less likely to include others, consistent with the nature of STEM subjects. Units written on STEM topics also are less likely to be rated as clearly written and more likely to be rated “not easily usable” by other teachers.

Although the experiences of Fellows and features of curriculum units written in the Teachers Institutes and Yale National Initiative often don't differ significantly, the units written in one of the programs are significantly less likely to contain sufficient background information to enable another teacher to teach the unit, and reviewers were more likely to rate them not easily usable by another teacher. Fellows in this program were less likely to report receiving enough guidance and helpful feedback from their seminar leader and less likely to report that their Seminar Coordinator was very helpful in key ways. Units in this program were more likely to be written for high school students on subjects in the natural sciences.

Conclusions

Consistent with the Teachers Institute theory of change, Fellows reported benefiting in a variety of ways from writing a curriculum unit in a Teachers Institute or Yale National Initiative seminar. At the end of their seminar, nearly all Fellows reported gaining knowledge of the seminar topic, and some described ways in which the curriculum unit writing process helped deepen their knowledge and understanding of the topic. Writing helped them absorb more knowledge of the topic, and feedback and suggestions from their seminar leader deepened their understanding. According to Fellows, deeper knowledge of the subject of their curriculum unit boosted their confidence in teaching it.

The Teachers Institute Curriculum Unit Guidelines identify the key elements that must be included in a curriculum unit and lay out a schedule for drafts and final units. They are accompanied by mechanical specifications that set a lower and upper limit for the number of pages and lay out requirements for formatting units for publication. Unlike most commercial curriculum materials, the Guidelines require curriculum units to emphasize subject matter and teaching approaches, and Fellows are expected not to provide complete lesson plans.

A systematic review of curriculum units suggests that, to a large degree, Fellows who complete Teachers Institute and National Initiative seminars are writing curriculum units as intended. Most curriculum units contain the required elements, and many also include other features to support their use by other teachers.

The Curriculum Unit Guidelines stress that the primary audience for the curriculum units consists of other teachers. The reviewers, who were teachers, rated nearly half the units as very user-friendly, that is, very clearly presented, well-organized, and complete so that another teacher could easily understand and teach the unit. Most of the remaining units were rated as usable, meaning that they were generally organized and complete and could be used by another teacher with a reasonable amount of work. A small proportion of units was considered not easily usable by another teacher.

Faculty seminar leaders, who reviewed a random subsample of curriculum units, also found that the majority of units were well-written and demonstrated an in-depth understanding of the topic. Despite the nonselective and inclusive nature of the Teachers Institute approach, the faculty reviewers found that only a small proportion of units demonstrated a superficial understanding of the unit topic.

Nearly all Institute curriculum units identify the standards they address, and many include teaching practices and learning activities designed to build 21st century skills and prepare students for success in college and work. The units include teaching and learning strategies focused on helping students master core academic content, think critically and solve complex problems, communicate effectively, work collaboratively, and learn how to learn.

The unit reviews document the use of a wide range of teaching practices and learning activities, but they do not present a complete picture of all practices and activities that unit authors plan to implement and cannot measure their prevalence in unit implementation. By design, the curriculum units do not usually

include complete lesson plans, and at the end of their seminar, most Fellows reported that they plan to do more work on their curriculum unit.

The unit reviews suggest that Fellows writing units on STEM topics are less likely than Fellows writing units on other topics to be successful in producing clearly written curriculum units. This finding may reflect differences in STEM and other Fellows' preparation and experience with writing, weaker support for writing from seminar leaders and Coordinators in STEM seminars, or the challenge of understanding and writing clearly for other teachers about scientific topics, especially at the secondary level.

The use of the curriculum units with students in the classroom by the authors and other teachers is key to influencing student learning. A companion report describes the use of the Teachers Institute curriculum units.

Bibliography

Casarella, Peter Joseph (1988). *Review of the Curriculum Units Written for the Yale-New Haven Teachers Institute 1978-1985*. Unpublished report.

Fry, Paul H. (2011). "What is a Teachers Institute Curriculum Unit?" *On Common Ground*, number 14, pp. 17.

Kisker, Ellen E. (2011). "The Teachers Institute Theory of Change." *On Common Ground*, number 14, pp. 4-7.

Partnership for 21st Century Skills (2009). *P21 Framework Definitions*. Accessed at http://www.p21.org/storage/documents/P21_Framework_Definitions.pdf on November 3, 2017.

Smith, Rogers M. (2004). *To Motivate My Students: An Evaluation of the National Demonstration Project of the Yale-New Haven Teachers Institute*. New Haven, CT: Yale-New Haven Teachers Institute, Yale University.

William and Flora Hewlett Foundation (2013). *Deeper Learning Competencies*. Accessed at https://www.hewlett.org/wp-content/uploads/2016/08/Deeper_Learning_Defined__April_2013.pdf on November 3, 2017.

Yale-New Haven Teachers Institute (1992). *A Progress Report on Surveys Administered to New Haven Teachers, 1982-1990*. New Haven, CT: Yale-New Haven Teachers Institute, Yale University.

APPENDIX A: Seminars Offered in 2014 and 2015 (Number of Curriculum Units in the Study Sample)

Institute	Seminars
DTI	Using Abstract Reasoning (3) Mathematical Proof and Reasoning, What, Why, and How? (4) Numbers and Social Problems (5) Organisms—Adaptations for Survival in Aquatic Environments (4) Stories in Performance (5) Varieties of Censorship (3) Human Population Growth (5) Things That Happen in Fiction (5)
TIP	Penn Laboratory on Energy Sustainability, and Environment (4) Electronics from Toys to Tools: An Adventure for Future Engineers (3) The Biology of Food (3) Robotics for Everyone! (3) Aliens and Others: African Americans [Re]Writing Generic Fiction (3) Roots of the American Empire (2) Teaching the Holocaust: Bearing Witness (4) Native American Voices: The People—Here and Now (3)
YNHTI	Engineering in Biology, Health, and Medicine (4) Big Molecules, Big Problems (2) Physics and Chemistry of the Earth’s Atmosphere and Climate (2) American Culture in the Long 20 th Century (3) Race and American Law, 1850-Present (4) Teaching Native American Studies (2) Exploring Community through Ethnographic Nonfiction, Fiction, and Film (4) Picture Writing (4)
YNI	Problem Solving and the Common Core (3) Microbes Rule! (3) Physiological Determinants of Global Health (4) Place Value, Fractions, and Algebra: Improving Content Learning through the Practice Standards (2) Eloquence (3) Literature and Information (4) Using Film in the Classroom/How to Read a Film (3) Immigration and Migration and the Making of the Modern American City (2) Playing with Poems: Rules, Tools, and Games (4) Explaining Character in Shakespeare (4) History in our Everyday Lives (4) Understanding History and Society (4)

APPENDIX B: Rubric Used to Review Curriculum Units

Curriculum Unit Review Rubric						
Rubric Item Number	Code	Page Number	Notes/Documentation	What to record	Examples from units	
Identification						
1	Title			Please enter the full title of the unit.		
2	Study ID Code			Please enter the study ID code on the assigned unit.		
3	Reviewer name			Please record your name.		
Subject areas						
4	Subject area(s) in which unit is intended to be implemented (CHECK ALL THAT APPLY)			<p>Check the subject area(s) in which the unit author clearly intends the unit to be implemented (as indicated in explicit statements or descriptions of the classes for which the unit is designed).</p> <p>If the unit could be adapted for use in other subject areas, please note that in the Notes column.</p>		
	<input type="checkbox"/> English Language Arts					
	<input type="checkbox"/> History and Social Sciences					
	<input type="checkbox"/> Languages other than English					
	<input type="checkbox"/> Arts and Music					
	<input type="checkbox"/> Natural Sciences					
	<input type="checkbox"/> Mathematics and Computer Science					
	<input type="checkbox"/> Vocational, Career, or Technical Education					
	<input type="checkbox"/> English as a Second Language					
Targeted students						
5	Grade(s) for which unit is designed (CHECK ALL THAT APPLY)			<p>Check the grades or grade ranges for which the unit is designed, as indicated by the unit author.</p>		
	<input type="checkbox"/> Kindergarten					
	<input type="checkbox"/> Grade 1					
	<input type="checkbox"/> Grade 2					
	<input type="checkbox"/> Grade 3					
	<input type="checkbox"/> Grade 4					
	<input type="checkbox"/> Grade 5					
	<input type="checkbox"/> Grade 6					
	<input type="checkbox"/> Grade 7					
	<input type="checkbox"/> Grade 8					
	<input type="checkbox"/> Grade 9					
	<input type="checkbox"/> Grade 10					
	<input type="checkbox"/> Grade 11					
	<input type="checkbox"/> Grade 12					
	<input type="checkbox"/> Primary grades					
	<input type="checkbox"/> Intermediate grades					
	<input type="checkbox"/> Middle school grades					
	<input type="checkbox"/> High school grades					
6	Names of courses or classes for which the unit is intended			If the unit author names the courses for which he/she created the unit, please record the name(s) of course(s)		
7	Type of class for which unit was designed		Description:	Check whether the unit describes the type of class(es) for whom it is designed and record a brief description in the Notes column.	<p>Designed for English language learners.</p> <p>Designed for classes with average and advanced students.</p> <p>Designed for AP English classes.</p>	

Rubric Item Number		Code	Page Number	Notes/Documentation	What to record	Examples from units
8	<input type="checkbox"/>	Characteristics of students in classes for which unit was designed		Description:	Check this if the unit describes the background characteristics of students to whom the author plans to teach the unit (for example, their family background, economic status, cultural background) and summarize them in the Notes column.	Students are mostly African American, many from families that struggle financially. Many are immigrants or students who transfer from the suburbs.
9	<input type="checkbox"/>	Prerequisites for teaching the unit		Description:	Check whether the unit specifies prerequisites for teaching the unit and provide a brief description of them. Prerequisites might include specific skills or previous subjects that students should have studied prior to implementation of the unit.	
Unit goals and purposes						
10	<input type="checkbox"/>	The unit describes the author's reason or purpose for developing the unit, or the rationale for creating the unit.		Description:	Check this if the unit describes the author's rationale or motivation for writing the unit or the purpose of the unit.	
11	<input type="checkbox"/>	The unit describes the student need it was designed to address.		Description:	Check this if the unit describes the student need it was designed to address (for example, the need for knowledge or a particular skill), and briefly describe the need.	
12	<input type="checkbox"/>	The unit describes how it fits into the existing curriculum.		Description:	Check this if the unit describes how it fits into the existing curriculum, and summarize how it fits.	Fills a gap in the district's history curriculum This unit is part of a larger unit called Expansion of Freedom.
Unit structure						
13	<input type="checkbox"/>	The unit includes a clear summary of the subject of the unit and the author's thematic approach to it.			Check this if the unit includes a clear summary of the content of the unit and the author's approach to the topic. If not, please describe in the Notes column how the summary of the unit content is incomplete or unclear.	
14	<input type="checkbox"/>	The background material in the unit is sufficiently clear and complete to enable another teacher to understand the topic and teach the unit.			Check this if the unit presents sufficient information on the topic to enable another teacher to teach the unit without doing extensive research of his or her own.	
15	<input type="checkbox"/>	The unit contains a unified, coherent teaching framework/plan.			Check this if the unit includes a unified, coherent teaching plan for the unit content. If it does not, please describe in the Notes column the ways in which the teaching plan is not unified or coherent.	
16	<input type="checkbox"/>	The unit includes lesson plans.			Check this if the unit includes lesson plans and record the number of lesson plans in the Notes column. A lesson plan spells out what the teacher and students will do during one or more class periods during the unit.	
17	<input type="checkbox"/>	The unit includes a list of materials for classroom use.			Check this if the unit includes a list of materials for classroom use or includes materials for classroom use in the appendix.	
18	<input type="checkbox"/>	The unit includes a teacher bibliography.			Check this if the unit includes an annotated bibliography for teachers using the unit.	
19	<input type="checkbox"/>	The unit includes a student reading list.			Check this if the unit includes a student reading or resource list.	
Teaching and learning strategies specified in the unit						
Check all teaching and learning strategies explicitly discussed in the curriculum unit. If a strategy is implied but not explicitly discussed, don't check the box but describe this in the Notes column. Use the explanations for each item in deciding whether the unit includes the strategy.					In the Notes column, briefly describe the information that justifies checking the item.	

Rubric Item Number		Code	Page Number	Notes/Documentation	What to record	Examples from units
20	<input type="checkbox"/>	Teacher lectures, makes presentations; direct instruction			During the unit, the teacher presents information to students in a lecture or presentation (teacher-directed instruction).	Teacher explains the essential ideas of the unit to students.
21	<input type="checkbox"/>	Teacher leads discussions with students			During the unit, the teacher and students discuss a topic. The teacher defines the topic, makes statements, and asks questions to shape the discussion. Students respond, ask questions.	
22	<input type="checkbox"/>	Students share with other students or the full class			During the unit, students share information or opinions or discuss a topic with some or all of the other students in the class.	Students will have a chance to come together as a whole group after small group collaboration to share their thinking.
23	<input type="checkbox"/>	Teacher and students discuss ideas and values guided by a text or structured set of questions; Socratic method			During the unit the teacher and students ask questions in a disciplined way to force the class to think in depth and critically about a subject.	
24	<input type="checkbox"/>	Teacher does demonstrations or models tasks for students			During the unit, the teacher shows students how to do something.	In Portraits of Disney Peace Builders, the teacher will model choosing a character.
25	<input type="checkbox"/>	Teacher differentiates learning for students with different abilities or learning styles			The teacher plans to adjust the unit's teaching plan, classroom activities, or materials for students with different abilities or learning styles, or indicates in the unit how another teacher might use the unit with different groups of students.	Teacher plans to group advanced students separately from other students and assign them a more challenging activity.
26	<input type="checkbox"/>	Teacher conducts formative assessment, checks for understanding			The unit indicates that the teacher will go beyond informal checking for understanding in the course of teaching and will use a tool or activity explicitly for formative assessment (to assess student understanding and make adjustments to teaching during unit implementation).	Teacher administers a test or assigns an essay to get information about student understanding and inform the design of subsequent lessons.
27	<input type="checkbox"/>	Teacher administers summative assessments or tests			The unit includes administration of a quiz, test, or assessment to measure what students learned during the unit.	
28	<input type="checkbox"/>	Students generate ideas and refine them (brainstorm, evaluate and refine ideas)			The unit includes activities or techniques such as brainstorming for amassing information, stimulating creative thinking, developing new ideas, and refining and narrowing the ideas for further work.	
29	<input type="checkbox"/>	Students apply facts and processes to real-world situations			The unit includes opportunities for students to apply what they've learned in the unit to a real-world situation, for example by recommending solutions to a real problem or using tools or processes to create a product.	
30	<input type="checkbox"/>	Students conduct experiments			An experiment is a structured procedure carried out to verify, refute, or validate a hypothesis. Experiments provide insight into cause-and-effect relationships by demonstrating what outcome occurs when a particular factor is manipulated. It may be a science experiment (for example, about a biological phenomenon) or a social science experiment (for example, about human or institutional behavior).	
31	<input type="checkbox"/>	Students conduct case studies			Case studies are in-depth investigations of a single person, group, event or community. Typically, data are gathered from a variety of sources and by using several different methods (e.g. observations & interviews).	

Rubric Item Number		Code	Page Number	Notes/Documentation	What to record	Examples from units
32	<input type="checkbox"/>	Students do close reading or analyze a piece of writing			In close reading or analyzing a piece of writing, students reread the text. The teacher gives students text-dependent questions that require them to go back into the text and search for answers. The questions encourage students to think about the text, the author's purpose, the structure of the writing, and the flow of the text.	
33	<input type="checkbox"/>	Students relate ideas, analyze how parts of a whole interact in a system			The unit includes activities to help students understand the bigger picture or develop a conceptual framework for understanding a phenomenon.	Jigsaw strategy--each student or group masters a piece of information to share with the rest of the class. Students move about the room trying to get all pieces of the puzzle, and the bigger picture is revealed.
34	<input type="checkbox"/>	Students formulate problems and generate hypotheses			The unit engages students in defining a problem to address and generating ideas for solving the problem.	
35	<input type="checkbox"/>	Students gather needed information and data			Students collect information (for example, by reading books, finding information on the internet, or interviewing knowledgeable people) or data (for example, by conducting a survey or measuring the result of an experiment).	Students research an assigned topic Students look at artwork, describe what they observe, back up their observation with evidence, listen to others' input, and discuss multiple possible interpretations.
36	<input type="checkbox"/>	Students analyze and interpret information and data			Students analyze information or data (for example, conduct statistical analysis, identify possible explanations for a phenomenon, or summarize information gathered from multiple sources) and interpret it (for example, discuss its meaning, integrate multiple sources of information, or derive conclusions from the data).	Students look at artwork, describe what they observe, back up their observation with evidence, listen to others' input, and discuss multiple possible interpretations.
37	<input type="checkbox"/>	Students learn by carrying out projects			Unit includes project-based learning that involves students in a coordinated set of activities to investigate and respond to an engaging question, problem, or challenge.	
38	<input type="checkbox"/>	Students make something (creative writing, visual art, performance, tools, products)			Students create something to express ideas (for example a poem or a drawing), present information (for example, an infographic), or carry out tasks (for example, tools).	
39	<input type="checkbox"/>	Students articulate ideas in writing			Students present their ideas in writing, for example in an essay, book review, or laboratory report.	
40	<input type="checkbox"/>	Students make oral presentations			Students make oral presentations to the class, for example to present information on a topic or report results of an activity.	Students present findings in a 2-minute presentation to class.
41	<input type="checkbox"/>	Students present ideas in other ways, such as dramatic performance			Students make other types of presentations, for example performing a play they wrote, demonstrating a tool they made, or conducting a debate.	Students are "wax figures" that come to life when a button is pressed to share biographic facts about their character. Students who don't present prepare a graphic organizer about the 10 amendments.

Rubric Item Number		Code	Page Number	Notes/Documentation	What to record	Examples from units
42	<input type="checkbox"/>	Students do collaborative work in small groups			Students work together in small groups to carry out an activity, such as discussing and summarizing a topic, carrying out an experiment, or developing and making a presentation.	
43	<input type="checkbox"/>	Students give and receive feedback and incorporate it into their work			Students review other students' work and make suggestions for improvement; students revise their work in response to student or teacher comments and suggestions.	Each student will share out information with the teacher in small groups and with the whole class to aid in revisions to their notes and presentation. Students will complete an end-of-unit survey evaluating the unit.
44	<input type="checkbox"/>	Students use digital tools and resources			In carrying out their work, students use digital tools and resources, including using software on computers or tablets, reading electronic books, accessing content or using tools on the internet, or listening to or viewing digital media (DVDs and videos).	Students record podcasts using Garageband Students view a documentary (on DVD).
45	<input type="checkbox"/>	Students use social media			Students post material on social media such as Facebook, Twitter, Instagram, or other similar platforms, or they write and post blog entries on a website.	
46	<input type="checkbox"/>	Teacher and students visit resources outside of school (for example, a field trip)			Teacher and students travel to another location outside of school, such as a museum, university, library, or company for unit activities.	
47	<input type="checkbox"/>	Outside resources come into class (for example, a guest speaker)			Teacher invites a guest speaker, arranges a performance by an outside group, or schedules mobile resources to come to class during the unit.	
48	<input type="checkbox"/>	Students set goals and monitor progress on tasks			During unit implementation the teacher involves students in setting goals and monitoring their progress in achieving the goals.	
49	<input type="checkbox"/>	Students reflect on their learning experience			Students have an opportunity near the end of the unit to evaluate the unit or discuss their opinions about what they did and didn't like about the unit.	
50	<input type="checkbox"/>	Other Specify:			Enter a description of the other type(s) of teaching and learning strategy discussed in the unit.	
Unit implementation						
51	<input type="checkbox"/>	The unit describes how to create a positive learning environment.		Description:	Check this if the unit includes specific guidance for creating a positive learning environment during the unit (beyond general practices for creating a positive learning environment in the classroom).	For example, check this if the unit addresses a topic related to race and provides guidance for creating a comfortable environment for student discussions of race.
52	<input type="checkbox"/>	The unit discusses differentiation .		Description:	Check whether the unit explicitly describes how it can be used with students of different abilities and provide a brief description in the Notes column of how. If the unit does not explicitly discuss differentiation but includes information that would help a teacher using the unit to differentiate instruction, don't check the box but describe it in the Notes column.	Lesson plans identify different activities for different students
53	<input type="checkbox"/>	The unit describes the student skills to be taught .		Description:	Check this if the unit identifies the skills to be taught, and record what they are	

Rubric Item Number	Code	Page Number	Notes/Documentation	What to record	Examples from units
54	<input type="checkbox"/> The unit describes what students will learn .		Description:	Check this if the unit explicitly describes what students are intended to learn and summarize it	
55	<input type="checkbox"/> The unit addresses anticipated challenges in teaching the unit.		Description:	Check this if the unit describes anticipated challenges in using the unit (beyond the student needs that inspired the unit) and briefly describe the nature of the challenges anticipated.	For example, if the unit includes a jigsaw activity in which students move about to construct the bigger picture, check this if the unit suggests ways to ensure students know where to go and what to do so the activity does not become chaotic.
56	<input type="checkbox"/> The unit specifies the number of lessons to teach unit.		Number of lessons specified:	Check this if the unit specifies or recommends the number of lessons, time to complete or pacing of lessons for implementation of the unit.	
57	<input type="checkbox"/> The unit describes the time period during which the unit is intended to be taught.		Time period specified:		
58	<input type="checkbox"/> The unit describes the intended pacing of lessons.		Intended pacing specified:		
Standards addressed					
59	<input type="checkbox"/> The unit identifies school district standards it addresses		Which standards?	Check this if the unit describes the district standards it addresses and record which standards	
60	<input type="checkbox"/> The unit identifies state or national standards it addresses		Which standards?	Check this if the unit describes the state or national standards it addresses and record which standards	
61	<input type="checkbox"/> The unit identifies Common Core State Standards it addresses		Which standards?	Check this if the unit describes the Common Core State Standards it addresses and record which standards	
Clarity and Usability					
62	Choose one rating to describe the clarity of writing in the unit.				Please rate the clarity of writing in this unit by checking one of the three boxes. Describe any concerns with clarity and understandability in the Notes column.
	<input type="checkbox"/>	Clear. The unit is written clearly and the subject matter and teaching strategies can be understood by other teachers.			
	<input type="checkbox"/>	Inconsistent clarity. The writing in the unit is sometimes clear and sometimes unclear. Some parts of the unit are difficult to understand.			
	<input type="checkbox"/>	Unclear. The unit is not written clearly and it is difficult to understand the content or teaching strategies.			
63	Choose one rating to describe the usability of the unit by other teachers.				Please rate the usability of the unit by checking one of the three boxes. Describe any concerns with the usability of the unit in the Notes column.
	<input type="checkbox"/>	Very user-friendly. The unit is very clearly presented, well-organized, and complete, and another teacher can easily understand and teach the unit.			
	<input type="checkbox"/>	Usable. The unit is generally organized and complete, and another teacher can use the unit with a reasonable amount of work.			
	<input type="checkbox"/>	Not easily usable. The unit is not presented clearly, not well-organized, or not sufficiently complete to enable another teacher to easily understand and teach the unit.			
64	<input type="checkbox"/> Unit stands out as exemplary.			Check the box if this unit is exemplary--it is not only clearly written and understandable, but it is exceptionally well written and inspiring.	

Rubric Item Number	Code	Page Number	Notes/Documentation	What to record	Examples from units
65	General comments			Describe any additional potentially important information about the unit that is not captured above and supply any clarifications that will aid in interpreting the information above	

APPENDIX C: Classroom Practices and Learning Activities Identified in the Curriculum Unit Review, by Dimension of Deeper Learning

Mastery of core content	Critical thinking and problem-solving	Effective communication	Ability to work collaboratively	Learning how to learn
Teacher lectures, makes presentations; direct instruction	Students generate ideas and refine them ⁺	Students articulate ideas in writing ^{*,+}	Students do collaborative work in small groups [*]	Students set goals and monitor progress on tasks ^{*,+}
Teacher leads discussion with students	Students formulate problems and generate hypotheses [*]	Students share with other students or the full class [#]		Students reflect on their learning experience ^{*,+}
Teacher does demonstrations or models tasks for students	Students gather data and information [*]	Students make oral presentations ^{*,+}		
Teacher and students discuss ideas and values guided by a text or structured questions; Socratic questioning	Students conduct experiments	Students present ideas in other ways, such as dramatic performance		
Students learn by carrying out projects	Students conduct case studies	Students give and receive feedback and incorporate it into their work ^{*,+}		
Students apply facts and processes to real-world situations [*]	Students analyze and interpret information and data ⁺	Students use social media ⁺		
Students make something	Students do close reading or analyze a piece of writing			
Teachers and students visit resources outside of school	Students use digital tools and resources ⁺			
Outside resources come into classroom				
Teacher differentiates instruction				
Teacher conducts formative assessment				
Teacher administers summative assessments				

Note: The list of teaching and learning strategies in the curriculum unit review rubric is based on the list included in Fellow questionnaires in the past. This list includes some strategies derived from other sources, as noted, and was augmented with strategies found in units examined in a pilot test of the rubric.

* Derived from William and Flora Hewlett Foundation (2013)

+ Derived from Partnership from 21st Century Skills (2009)

Added during pilot test of the curriculum unit review rubric