Massachusetts CURATE Project: *Cu*rriculum *Ra*tings by *Te*achers

 *Digital Literacy and Computer Science* Rubric

Purpose of the Rubric 

The CURATE rubric is designed for use by CURATE panelists to evaluate core ***curricular***
***materials*** for English Language Arts/Literacy; Mathematics; Science and
Technology/Engineering; and Digital Literacy and Computer Science and may also be
used by educators in other contexts.

***Core curricular materials*** are comprehensive resources designed for use with *all* students to access grade level content and standards in a given class over the course of a year or semester.

Through the use of the rubric, CURATE aims to elevate curricular materials that are high quality. A further distinction to clarify is connected to skillful implementation and aligned professional learning. The CURATE rubric evaluates for the content of the materials but **does not and is not intended** to measure implementation or professional learning. The Massachusetts Department of Elementary and Secondary Education (DESE) believes ***high quality instructional materials (HQIM)***are aligned to the Massachusetts content and practice standards, empower culturally and linguistically sustaining practice, and exhibit a coherent sequence of target skills, instructional practices, and understandings. These materials are accessible for all students, including students with disabilities, students working above and below grade level, English learners (ELs), and students of color. HQIM should strongly support teachers in their everyday work to be inclusive and culturally and linguistically sustaining.Curricular programs that receive an overall rating of ***“meets expectations”***or ***“partially meets expectations”*** via CURATE are considered HQIM. Although materials may be rated “high quality” this does not mean they are perfect. Materials rely on the skillful implementation of teachers who need to consider their local contexts and student needs. Schools or districts should also consider their local priorities and their student and teacher needs when analyzing CURATE reports since the challenges reported may impact districts differently.

Guidelines for Review

* Review and document all evidence before deciding on ratings.
* Consider quantity as well as quality of evidence for each indicator.
* Consider evidence of high quality as well as evidence of low quality.
* Do not feel compelled to weigh each indicator and criterion equally.
* Do not consider provided examples to be exhaustive or restrictive.
* If evidence is lacking for an indicator, flag it for further data collection.

Sources of Evidence

* The product (curriculum materials) itself: unit and lesson plans, teacher guides, student-facing resources, associated software, and other components
* Other credible and comprehensive reviews of curriculum materials, such as the [Massachusetts Digital Literacy and Computer Science Curriculum Guide](https://www.doe.mass.edu/stem/dlcs/curriculum-guide.pdf)
* Perceptual data, such as survey responses and focus group findings, from educators with experience using the product in schools
* Information—such as product specifications and videos of teachers using the product—provided by its developers or publishers
* Research findings: see criterion 5 below for guidance on how to evaluate and interpret research on a product’s efficacy

Definitions of Ratings

* **3: Meets Expectations** – Most or all evidence indicates high quality; little to none indicates low quality. Materials may not be perfect, but Massachusetts teachers and students would be well served and strongly supported by them.
* **2: Partially Meets Expectations** – Some evidence indicates high quality, while some indicates low quality. Teachers in Massachusetts would benefit from having these materials but need to supplement or adapt them substantively to serve their students well.
* **1: Does Not Meet Expectations** – Little to no evidence indicates high quality; most or all evidence indicates low quality. Materials would not substantively help Massachusetts teachers and students meet the state’s expectations for teaching and learning.
* **?: Insufficient Evidence** – More evidence is needed before a rating can be justified. If you are unsure about a rating because you lack relevant information, be sure to choose this option instead of “defaulting” to a rating of Partially Meets Expectations.

Rubric Structure

| ***Domains*** | Standards Alignment | Classroom Application |
| --- | --- | --- |
| ***Criteria*** | Scope and Progression | Approach to Instruction | Accessibility for Students | Usability for Teachers | Impact on Learning |

Rubric

| **Domain: Standards Alignment** |
| --- |
| **Criterion** | **Indicator** | **Notes and Tips** | **Further Reading** |
| **1. Scope and Progression***Note:* This rubric was developed for the CURATE project, which evaluates materials that have previously been reviewed for alignment to state standards[[1]](#footnote-1). If using this rubric to review materials not already screened for some degree of standards alignment, consider adding or expanding indicators to ensure a comprehensive evaluation. | 1. **Materials’ expectations align to grade level standards:**
* **Massachusetts grade span standards are addressed.**
* **Digital Literacy and Computer Science Practices are appropriately addressed for the grade span.**
 | * DLCS practices can only be evaluated to the depth of the grade-band. Practices can take many forms in curriculum and instruction; the key is that students are actively supported in learning the practices and engaged in doing them.
* While the specific grade in which certain grade level standards included in a curriculum should not factor into the overall rating of a curriculum product, it may be useful to note certain patterns or choices of where certain standards are included in the curriculum (e.g., if a Grades 6-8 curriculum places all CS-related standards in Grade 6).
 | * [MA 2016 DLCS Curriculum Framework](http://www.doe.mass.edu/frameworks/current.html)
	+ See pages 17-19 for practices overview
* [Digital Literacy and Computer Science Curriculum Guide for Massachusetts Districts](https://www.doe.mass.edu/stem/dlcs/curriculum-guide.pdf)
 |
| 1. **Materials facilitate coherent progressions of learning within and across grade levels:**
* **Concepts build on one another.**
* **Students take increasing responsibility for practices.**
 | * Coherence in DLCS can be exemplified in the following ways
	+ Within a grade level - when standards are logically and purposefully bundled into units that build upon and relate to one another – in content knowledge, language learning, and use of the practices.
	+ Across grade levels – when units are logically and purposefully bundled by grade, and standards are addressed fully throughout the full sequence (e.g., a standard may be revisited over multiple grade levels because it is foundational, or because more depth can be attained by revisiting it).
* Practices, such as analyzing, creating, and researching, should progressively become more sophisticated in both content and linguistic demand.
 | * [MA 2016 DLCS Curriculum Framework](http://www.doe.mass.edu/frameworks/current.html): see pages 17-19 for practices overview.
* Article about language learning in Science, with applications to similar concepts in DLCS (e.g., defining problems; using computational thinking; developing designs) [Language Demands and Opportunities for ELLs](https://ul.stanford.edu/sites/default/files/resource/2021-12/03-Quinn%20Lee%20Valdes%20Language%20and%20Opportunities%20in%20Science%20FINAL.pdf) (Stanford University)
 |
| **2. Approach to Instruction***Note:* This rubric was developed for the CURATE project, which evaluates materials that have previously been reviewed for alignment to state standards. If using this rubric to review materials not already screened for some degree of standards alignment, consider adding or expanding indicators to ensure a comprehensive evaluation. | 1. **Materials balance activities to set context and provide information with activities that engage students in developing skills, practicing application, and creating.**
 | * Students have opportunities to learn concepts and apply understanding in multiple contexts, such as through plugged (using technology) and unplugged (without technology) contexts.
* Students are provided multiple opportunities to learn DLCS concepts and skills, and to develop those through practice, application, or creation of artifacts.
 |  |
| 1. **Materials purposefully and effectively integrate DLCS Practices with concepts:**
* **Practices are used for specific, content-driven purposes.**
 | * Practices, such as connecting and analyzing, should be integrated with concepts and should not stand alone.
* Although the MA standards are often written to integrate a practice with a concept, the content in the standard can be taught (or assessed) in combination with any practice. The practice integrated in the standards are a guide for curriculum and instruction.
 | * [MA 2016 DLCS Curriculum Framework](http://www.doe.mass.edu/frameworks/current.html): see pages 17-19 for practices overview.
 |
| 1. **Materials encourage students to justify and explain solutions to problems using clear oral and written communication.**
 | * Materials provide examples of, or encourage sharing of, different solutions and approaches to problem solving.
* Materials allow for sustained discussions about grade-appropriate content and productive student discourse.
	+ Do materials incorporate a comprehensive approach to fostering language proficiency in the four domains (speaking, reading, listening, and writing) among Els during student academic discourse?
* Materials provide resources to affirm various cultural and linguistic representations of content knowledge. For example, this could include evaluating the possible problem-solving approaches to the same problem from multiple gender, ethnic, or linguistic backgrounds.
* Students are provided opportunities to participate in regular conversation and collaboration with peers focused on lesson content.
* This relates to DLCS practices of communicating and collaborating.
 | * Article about language learning in Science, with applications to similar concepts in DLCS: [Science Guidelines: Area of Focus 1; Interdependence of Science and Language Learning](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/63583dfce1ea050576a1b335_ELSF_Science_Guidelines-02b.pdf) (ELSF, p.8)
 |
| 1. **Materials support student selection and use of a range of appropriate representations and tools for learning goals and tasks.**
 | * Materials provide opportunities for students to use multiple representations, such as visual, physical, digital, or verbal forms that take the form of tables, graphs, drawings, diagrams, models, flow charts, or code.
* Students select and justify tools (technologies) for given tasks.
 | * Article about choice and multiple representations in Math, with applications to similar concepts in DLCS: [Math Guidelines: Area of Focus II; Scaffolding and Supports for Simultaneous Development](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/5e73a972f52c4e4007662b52_ELSF%20Math%20Guidelines.pdf) (ELSF, p.11)
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| **Domain: Classroom Application** |
| --- |
| **Criterion** | **Indicator** | **Notes and Tips** | **Further Reading** |
| **3. Accessibility for Students***Note:* While no one set of materials can serve all students’ needs, they should strongly support teachers tasked with doing so. Standard II of the [MA model teacher evaluation rubric](http://www.doe.mass.edu/edeval/model/PartIII_AppxC.pdf) sets expectations for teaching all students. | 1. **Materials provide for varied means of accessing content, helping teachers meet the needs of diverse students, including those with disabilities.**
 | * Consider whether materials provide differentiated strategies and/or activities to meet the diverse needs of students working below proficiency, English Learners (ELs), and those of advanced learners.
* Consider whether materials provide [multiple means of representation](http://udlguidelines.cast.org/representation) and opportunities for collaborative learning (e.g., partner work).
* Accessibility options are provided in technical platforms (e.g., text-to-speech, translations, simplified screens, high-contrast mode)
* Consider intentional and varied points of access as an important strategy for ELs.
 | * Guidebook for Inclusive Practice, [Example Artifact List](http://www.doe.mass.edu/edeval/guidebook/5b-exartifacts.pdf): illustrates ways in which instructional materials can support *inclusive practice*, which encompasses Universal Design for Learning (the focus of these two indicators), Positive Behavioral Interventions and Supports, and Social and Emotional Learning
* [Universal Design for Learning Guidelines](http://udlguidelines.cast.org/?utm_medium=web&utm_campaign=none&utm_source=cast-about-udl) (CAST, 2018)
* [Science Guidelines: Area of Focus IV; Supports and Structures for Science and Language Learning](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/63583dfce1ea050576a1b335_ELSF_Science_Guidelines-02b.pdf) (ELSF, p.11)
 |
| 1. **Materials provide for varied means of demonstrating learning, helping teachers meet the diverse needs of students, including those with disabilities.**
 | * Consider whether materials provide students the support needed to succeed on tasks and activities, helping meet the diverse needs of students with disabilities, English Learners, and those below and above grade level.
* Consider whether materials provide [multiple means of action and expression](http://udlguidelines.cast.org/action-expression) and opportunities for students to make choices.
 |
| 1. **Materials help teachers ensure that students at various levels of English proficiency have access to grade-level content, cognitively demanding tasks, and opportunities to develop academic language in English.**
 | * Materials should offer supports specific to ELs (e.g., references to cognates, as-needed scaffolding, and entry points to amplify—rather than simplify—complex language) as well as supports that benefit ELs among other learners (e.g., repeated exposure to academic vocabulary and opportunities to develop academic language in English).
* Materials should support teachers to [develop ELs’ content knowledge and English proficiency simultaneously](http://www.doe.mass.edu/ele/guidance/sei/sei.docx) by using the WIDA standards framework to identify the language expectations, forms, and features students need to communicate information, ideas and concepts necessary for academic success in the science content.
* Materials should support teachers to [differentiate language demands for ELs while maintaining cognitive demand](https://wida.wisc.edu/sites/default/files/resource/2012-ELD-Standards.pdf#page=13) and access to grade-level content.
* Supports could be language specific, language family generalized, and/or inclusive of home languages.
 | * DESE’s [EL Blueprint for Success](https://www.doe.mass.edu/ele/blueprint/dashboard.html)
* [The 2020 Edition](https://wida.wisc.edu/teach/standards/eld/2020) (WIDA Consortium)
* [Examples of relevant resources](https://wida.wisc.edu/resources/implementation-guide-wida-eld-standards-framework) (WIDA Consortium):
	+ Sensory supports (e.g., real-life objects, manipulatives, videos)
	+ Graphic supports (e.g., charts, tables, graphs, timelines)
	+ Interactive supports (e.g., pair and group work, software)
 |
| 1. **Materials represent and value diverse backgrounds, perspectives, and identities, and help students to analyze equity in DLCS contexts.**
 | Questions to consider:* Do the materials elevate diverse backgrounds, perspectives, languages, and identities to deepen learning?
* Do the materials provide a diverse set of characters, including identities of varied gender, sexual orientation, linguistic, and racial/ethnic backgrounds?
* Do the lessons provide a wide range of activities and choice that will engage those typically underrepresented in DLCS?
* Do the materials support teachers to elevate diverse backgrounds, strengths, and challenges, including those challenges rooted in systemic oppression?
* Do the materials provide teachers with guidance on how to approach, enhance, and customize lessons for their student populations?
* Do the materials help teachers to actively draw upon students’ diverse backgrounds to help them deepen learning, make real-life connections, examine their perspectives and learn about others’, and to help them advance their thinking and actions about equity, power, and anti-racism?
 | * [Assessing Bias in Standards and Curricular Materials](https://greatlakesequity.org/resource/assessing-bias-standards-and-curricular-materials) (Coomer, Skelton, Kyser, Thorius, & Warren, 2017)
* [Culturally Responsive Curriculum Scorecard](https://research.steinhardt.nyu.edu/scmsAdmin/media/users/atn293/ejroc/CRE-Rubric-2018-190211.pdf) (p. 12) (NYU Metro Center, 2019)
* [The Culturally Responsive-Sustaining Curriculum Scorecard](https://steinhardt.nyu.edu/sites/default/files/2021-02/CRSE-STEAMScorecard_FIN_optimized%20%281%29.pdf) (NYU Metro Center)
* [Culturally Responsive-Sustaining Computer Science Education: A Framework](https://www.kaporcenter.org/culturally-responsive-sustaining-computer-science-education-a-framework/) (Kapor Center)
* [Culturally Responsive Look Fors](https://www.doe.mass.edu/edeval/resources/calibration/look-fors.docx) (DESE)
* [Science Guidelines: Area of Focus 2, Leveraging Student Assets](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/63583dfce1ea050576a1b335_ELSF_Science_Guidelines-02b.pdf) (p.9, ELSF)

[DESE is collecting samples of openly available curricular materials that exemplify valuing diverse backgrounds, perspectives, and identities. To nominate a resource to be featured here, contact DESE-CURATE@mass.gov.] |
| **4. Usability for Teachers***Note:* Materials should strongly support teachers in their everyday work. Standard I of the [MA model teacher evaluation rubric](http://www.doe.mass.edu/edeval/model/PartIII_AppxC.pdf) defines expectations for teachers related to curriculum, planning, and assessment. | 1. **Lessons and tasks advance student learning with clear purpose.**
 | Consider whether:* The intended purpose of each lesson and task is clear.
* Lessons and tasks serve their intended purposes effectively.
* Lesson outcomes and aligned standards are reasonable in scope or number, and achievable through lesson activities.
 | [DESE is collecting samples of openly available curricular materials that exemplify various aspects of usability. To nominate a resource to be featured here, contact DESE-CURATE@mass.gov.]* [Science Guidelines: Area of Focus IV; Supports and Structures for Science and Language Learning](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/63583dfce1ea050576a1b335_ELSF_Science_Guidelines-02b.pdf) (ELSF, p.10)
* [Math Guidelines: Area of Focus V: Assessment of Mathematical Content, Practices, and Knowledge](https://assets-global.website-files.com/5b43fc97fcf4773f14ee92f3/5e73a972f52c4e4007662b52_ELSF%20Math%20Guidelines.pdf) (ELSF, p.14)
 |
| 1. **Materials support teachers with suggested classroom routines and structures (e.g., grouping strategies).**
 | * *Routines* pair high leverage instructional practices with how students are interacting with the materials, and should appear with regularity (e.g., pairing students for coding activities followed by class reflection).
	+ *Routines* should encourage equitable and inclusive student participation that support the simultaneous development of language and content learning.
* *Structures* may include best practices for set-up and organization of technology, teacher prep prior to class, timing and structure of a typical lesson (e.g., stations, talk protocols, speaking prompts, listening/note taking tools), and appropriate groupings for components of the lesson (e.g., large group, small group, partner, independent with consideration of group work roles).
	+ Structures should be designed to broaden participation and cultivate collaboration among students, including English learners and students with disabilities.
* Materials provide resources to support productive student discourse (e.g. consistent discussion protocols, guidance on how to monitor for equity, flexible grouping recommendations to enhance language development such as heterogeneous groups, home language groups, etc.).
* Materials provide resources to actively avoid potential bias in grouping strategies.
 |
| 1. **Pacing is reasonable and flexible; the curriculum can be implemented effectively in a range of school-year or grade-span scheduling models.**
 | Consider whether:* Time estimates for lessons and units are accurate, feasible, and flexible.
* Flexible options exist for a variety of school schedules and program designs.
 |
| 1. **Materials include informal and formal assessments that help teachers measure learning and adjust instruction.**
 | Consider whether:* Assessments provide multiple opportunities to help identify students’ gaps in knowledge or skill, including language learning.
* Materials guide teachers toward next steps based on assessment data (e.g., reteaching, reassessing, continued practice).
 |
| 1. **Materials include rubrics, exemplars, or other resources to help teachers set clear and high expectations for students.**
 | In addition to rubrics and exemplars, relevant resources might include: * Checklists for students to use in peer or self-assessments
* Annotated student work at various levels of achievement, including non-exemplars, or student work at different levels of English development
* Formative assessments for pre- or in-process assessment of student skills and knowledge
 |
| 1. **Materials include guidance and resources designed specifically to build teachers’ subject matter knowledge.**
 | * Relevant supports might bolster aspects of *content knowledge* (e.g., explaining DLCS concepts, demonstrating DLCS practices) as well as *pedagogical content knowledge* (e.g., appropriate instruction for student engagement in DLCS practices) , or of culturally and linguistically sustaining practice.
* Do the materials provide a range of supports for teachers that include both topic understanding, language development, and specific lesson/standards guidance?
	+ Formats might vary: consider callout boxes and annotations in lessons, videos of classroom instruction, implementation guides, and more.
* Do the materials support teachers to recognize their own pedagogical biases?
* Do the materials provide context for teachers to develop their sociocultural consciousness by accurately contextualizing historical frames and providing various cultural developments for similar concepts?
* Do the materials provide teachers with guidance on how to approach, enhance, and customize lessons to be inclusive and responsive to the diverse identities of students, inclusive of linguistic, racial, ethnic, and gender diversity?
 | * Subject Matter Knowledge (SMK) Guidelines set expectations for Massachusetts educators’ content knowledge. Information about SMKs is available on DESE’s [educator preparation page](https://www.doe.mass.edu/edprep/resources/guidelines-advisories/).
* [Designing Educative Curriculum Materials to Promote Teacher Learning](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.453.7864&rep=rep1&type=pdf) (Davis & Krajcik, 2005)
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| **5. Impact on Learning***Note:* For CURATE reviews, DESE’s research office determines ratings for this indicator and criterion. | 1. **Research demonstrates that the materials have a positive impact on student learning.**
 | * Research that meets expectations:
	+ Falls into evidence tiers 1, 2, or 3 as [defined by ESSA](https://www2.ed.gov/policy/elsec/leg/essa/guidanceuseseinvestment.pdf)
	+ Concerns the specific product under review, not just pedagogical strategies the product incorporates
	+ Is conducted by an independent, disinterested party
 | * DESE’s [“How Do We Know?” Initiative](http://www.doe.mass.edu/research/howdoweknow/) helps educators gather, assess, and use evidence to make informed decisions about programs and practices.
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1. The *DLCS Curriculum Guide for MA Districts* by STEM Learning Design, LLC, includes alignments for a variety of DLCS curricula. This document is current as of Spring 2022. [↑](#footnote-ref-1)