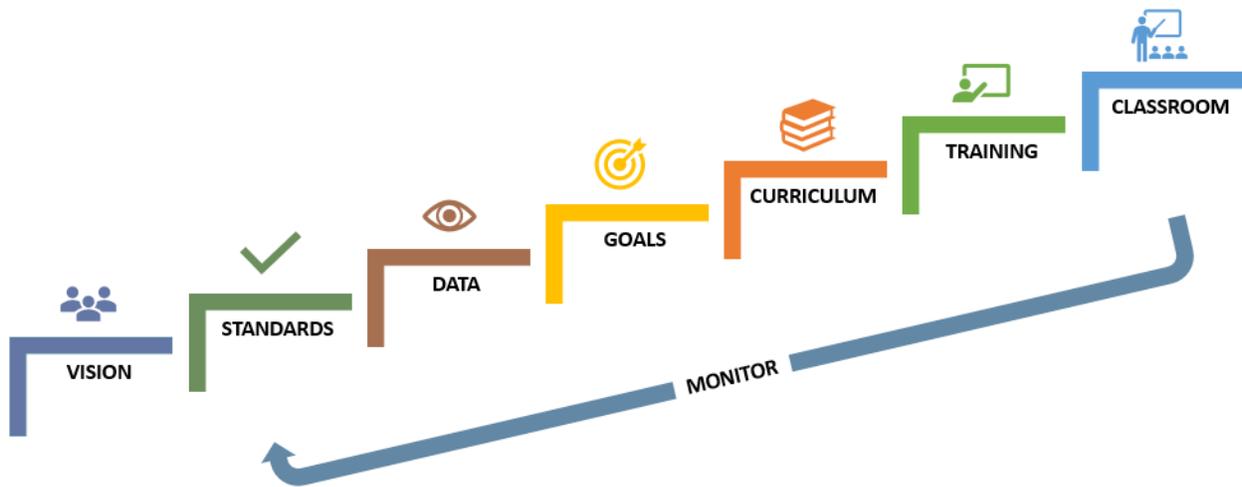# DIGITAL LITERACY AND COMPUTER SCIENCE
DISTRICT IMPLEMENTATION PROCESS

Districts across Massachusetts are in varying states of Digital Literacy and Computer Science (DLCS) implementation. Many offer a variety of courses at the high school level but few or none at earlier grades. In Massachusetts, 82% of public high schools offer computer science, however, only 5.9% of our public high school students take a foundational computer science course[1]. The purpose of this guidance document is to assist schools and districts in analyzing their current DLCS programming and, from this analysis, design and implement a comprehensive DLCS program that prepares all students within the district for a career in the 21st century.

SET UP FOR SUCCESS

Before getting started, it is important to put several foundations in place:

- Build a team for this work. To ensure success, this team should include district and school decision makers who can support the implementation and move it forward. DLCS standards are often taught across the curriculum, particularly digital literacy skills, and student learning experiences across grade levels is often widely variable. Your work will be much more effective with team members who are knowledgeable about current DLCS practices, who may be key in implementing future DLCS curriculum, and/or who can support decision making and implementation. It is recommended that your team consists of at least
  - one district administrator,
  - one building administrator,
  - one DLCS teacher, and
  - one DLCS curriculum leader, if this role exists in your district.
- Know where to get data on DLCS enrollment with demographics on enrollment such as gender, race/ethnicity, SWD, ELL, and Economically Disadvantaged. Identify who in the district can provide course and enrollment data or identify the district process to request data. Often a registrar or guidance department can provide this data.
- Consider attending a facilitated CSforALL Strategic Resource & Implementation Planning Tool (SCRIPT) workshop with your team.

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[1] https://advocacy.code.org/state_handouts/Massachusetts.pdf

OVERVIEW OF THE PROCESS

The graphic below outlines the general process for building a strong K-12 DLCS implementation in your district.
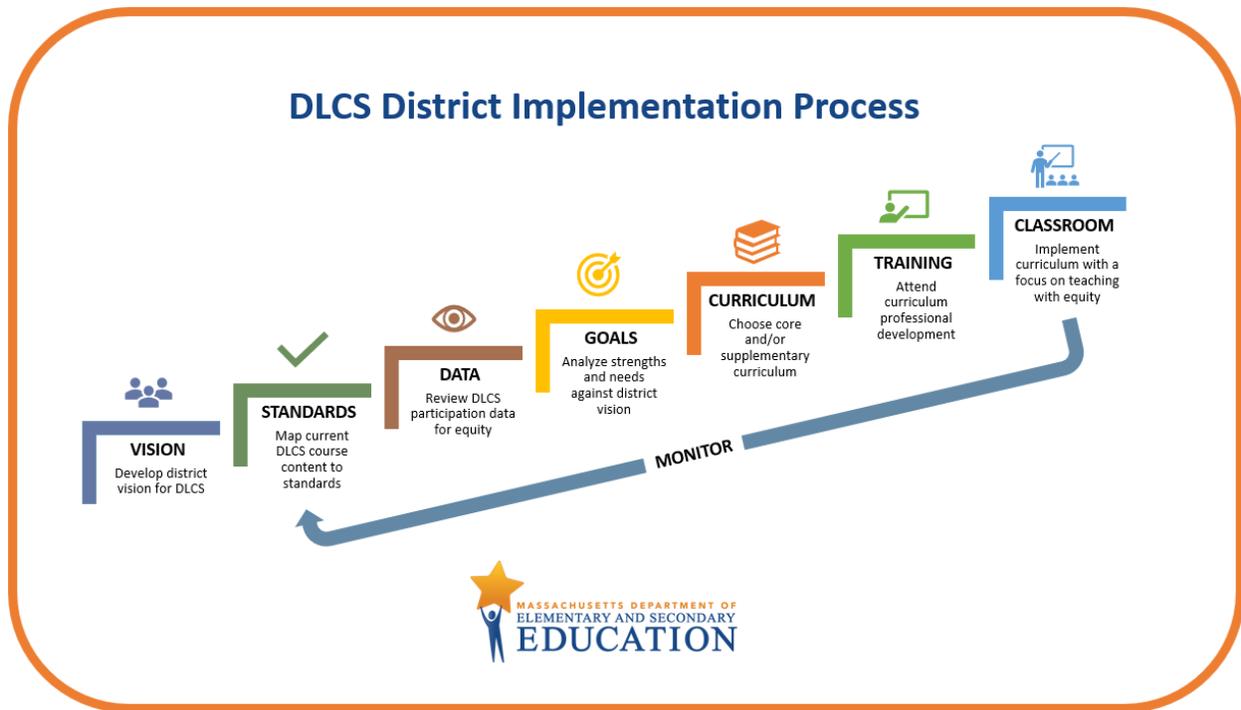
The DLCS District Implementation Process steps may be used to complete a thoughtful DLCS curriculum and implementation analysis. These steps are intended to be a guideline for your work but your district context may call for changes to these steps in some way. To further assist you in curriculum selection work, DESE offers an Evaluating & Selecting Network which can guide you through the steps of evaluating and selecting high quality curricula for your implementation. Visit IMplement MA for more information on this network.

DISTRICT and SCHOOL VISION

It is important that your team is clear about the vision and goals of a district and school DLCS program. Throughout this process you will reflect on how your work and choices advance the vision and goals or whether they need to be adjusted as you progress through the process.

- Recruit a District Team for this work.
- A SCRIPT workshop is an option to help your district team determine where you are in DLCS implementation and to set a district vision.
- CSforMA is a local provider of SCRIPT Training.

MAP STANDARDS

Map your district's current implementation of DLCS curriculum and learning opportunities to the [DLCS Curriculum Framework (2016)](#). Use the appropriate *Standards Alignment Worksheet* to record where DLCS standards are currently being addressed in school curriculum:

[K-2 Standards Alignment Worksheet](#)
[3-5 Standards Alignment Worksheet](#)
[6-8 Standards Alignment Worksheet](#)
[9-12 Standards Alignment Worksheet](#)

1. Identify in which classes or courses DLCS standards are being addressed. Look across the curriculum! For example, Digital Literacy standards are often addressed in core subjects such as ELA and History/Social Studies.

2. On the first tab, indicate in relevant cells where a particular standard is taught; leave cells blank if the standard is not addressed in the course. You may also add notes here to indicate if a standard is taught in depth, only touched upon, or if a particular course is a good place to teach this standard in the future.

3. On the second tab, include basic information for each class or course (such as grade level, whether it is required or elective, and student contact hours).

COLLECT DLCS DATA

Obtain data for each course identified in the mapping exercise. Data can include:

1. Course code # (if not identified above)
2. Student enrollment; current and over time
3. Student demographics; current and over time
4. Other data or details as desired, particularly to examine access and performance of different student populations.
5. Use the [Data Template Spreadsheet with Pivot Tables](#) (this will ask you to make a copy in your Google Drive. Once it opens, you may use File > Move to move it where you want in your Google Drive). This template provides you with suggested data to collect and how to analyze it to recognize participation rates of various student populations. Understanding gaps in participation within your district will help you to focus your efforts on equitable access and participation in DLCS.

   - Raw data should be available from your district data office/person. The template spreadsheet provides an example of what can be done with the data. Additional district data may be available that can support even further analysis.

   - The course types, "DL", "CS", "DLCS", are not found in typical district data. This [Course Codes Sheet](#) provides instructions on incorporating course type data into your analysis.

ANALYZE DLCS DATA

Using the STANDARDS MAP and DLCS DATA, engage your team in an examination of program strengths and needs. The Gradespan summary worksheets may help to begin your discussion. The following sample facilitation questions may also be useful:

1. Do all students have access to DLCS curriculum in all grades? All student populations, including SWD and ELL students?
2. Do our current offerings provide opportunities to learn all DLCS topics and standards (a comprehensive approach)? What are our strengths? Key needs?
3. How can we enhance access, opportunity, and interest to learn DLCS standards for all students, and all student populations?
4. What grade levels, DLCS topics, or standards need enhancement? Aim to comprehensively address DLCS topics and standards.
5. What are the particular curricular design features and instructional strategies that our current DLCS programming emphasizes? How do those relate to other curriculum areas?
6. What are the particular curricular design features, format, or themes (e.g., integrated; stand-alone; project-based; web-based; physical computing/robotics; artificial intelligence) that will complement or advance existing programming?
7. What is offered to students in the grade(s) above and/or below, and how do those experiences contribute to student needs at the grade(s) being examined?
8. Are certain student groups reflected and centered in the curriculum while other groups (e.g., female, BIPOC) are not?
9. How are we ensuring that the DLCS content is reflecting varied student interests, including those from underrepresented groups?
10. Are there any infrastructure needs (e.g., number of teachers, number of course sections) that are impacting student participation?

GOALS

SET GOALS FOR THIS YEAR

After mapping your current implementation and analyzing your district data, assess where your district is in relation to its DLCS vision. Use this assessment to determine achievable goals for this year towards that implementation vision. Your team may use the DLCS Pathways considerations worksheet to determine the pathways from one grade to another.

Building a strong DLCS implementation in a district typically requires a phased approach with an implementation focus on one grade span per year. We recommend beginning with middle school the first year and expanding to high school or elementary (K-2 or 3-5) in subsequent years. Include in your goals how you will select educators, provide training, and support them throughout the school year implementation.

SELECT CURRICULA

Based on your team's analysis, choose core curriculum (supplementary in subsequent years) to enhance your DLCS program and student learning opportunities.

1. Use the curriculum summaries in the Massachusetts DLCS Curriculum Guide to identify potential core curricula that help meet needs identified in the Data and Goals steps, above. Select a core curriculum for each grade span and, only once that core curriculum has been implemented, supplementary curricula may be added in subsequent years.
2. Consider how your potential choices contribute to a coherent progression of learning. See the section "K–12 DLCS Pathways Guidance" in the Massachusetts DLCS Curriculum Guide for relevant considerations.
3. Identify necessary teacher professional development and materials needed to pilot a curricular choice.
4. Plan a support team or PLC for teacher(s) piloting the course either within your district or with other districts.

ATTEND TRAINING

Successful implementation of any curriculum materials is enhanced when participating educators and school leaders are provided professional development on the goals, design, and practices of the curriculum. Training prior to initial implementation, and periodic support for participating educators during implementation, helps ensure that students engage with the curriculum as intended, and adjustments made to account for local conditions are consistent with the curriculum design. Note that a curriculum professional development workshop typically assumes that the teacher has DLCS content knowledge. If a teacher has limited or no CS background, they should take an introductory CS course *prior* to the curriculum PD.

Many DLCS curriculum vendors provide professional development on their curriculum. Additionally, CSforMA, a non-profit organization in Massachusetts, provides Digital Literacy, Computer Science, and Curriculum PD over two weeks in the summer. Check the CSforMA Professional Development webpage for updates.

IMPLEMENT CURRICULUM and MONITOR

Once a curriculum choice is settled on, and educators have engaged in relevant training, school and district efforts are on implementation and monitoring. There should be a specific focus on teaching with equity and culturally relevant pedagogy to engage all students in DLCS curriculum.

Support for teachers implementing a new curriculum can include a district or regional PLC. Additionally, CSTA is a national organization for Computer Science teachers with Massachusetts hosting two active chapters. Educators may join the national organization (basic membership is free) and one, or both, local chapters for meetings and group email.
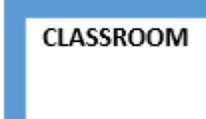
CSTA National
CSTA Western Massachusetts
CSTA Greater Boston

Districts may also reference implementation guidance provided by the DESE IMplement MA Process.

Remember that DLCS Implementation for districts will, most likely, be a phased approach. You may elect to implement new curricula and courses at only one grade, or you may select an entire grade span. Plan for a three or four year implementation plan with time set aside in those years to monitor and review each step of the process before setting goals for the next year. The critical focus each year of implementation will be on providing support for your teachers with initial PD and follow-up meetings, ensuring equity in the curriculum and a culturally responsive pedagogy to ensure all students are engaged in DLCS topics, and providing opportunities and encouragement for all students to continue taking digital literacy and computer science topics as they move into high school and beyond.

DLCS DISTRICT IMPLEMENTATION PROCESS
QUICK REFERENCE

VISION	**Develop a District Vision for DLCS** Recruit a District Team for this work. A SCRIPT workshop is an option to help your district team determine where you are in DLCS implementation and to set a district vision. CSforMA is a local provider of SCRIPT Training
STANDARDS	**Map Current DLCS Course Content to Standards** 2016 DLCS Curriculum Framework K-2 Standards Alignment Worksheet 3-5 Standards Alignment Worksheet 6-8 Standards Alignment Worksheet 9-12 Standards Alignment Worksheet
DATA	**Review DLCS Participation Data for Equity** Data Template Spreadsheet with Pivot Tables (this will ask you to make a copy in your Google Drive. Once it opens, you may use File > Move to move it where you want in your Google Drive) Course codes with DL, CS, or DLCS indicator Gradespan summary worksheets
GOALS	**Analyze Strengths and Needs Against District Vision** Determine achievable goals towards that vision for the coming school year. DLCS Pathways considerations worksheet
CURRICULUM	**Choose Core Curriculum for Each Grade Span** Use the curriculum summaries in the Massachusetts DLCS Curriculum Guide to identify potential curricula that help meet the needs identified through the Data and Goals steps. Select a core curriculum for each grade span and, only once that core curriculum has been implemented, supplementary curricula may be added in subsequent years.
TRAINING	**Attend Curriculum Professional Development** Many DLCS curriculum vendors provide professional development on their curriculum. Additionally, CSforMA provides Digital Literacy, Computer Science, and Curriculum PD over two weeks in the summer. Check the CSforMA Professional Development page for updates.

	Implement Curriculum with a Focus on Teaching with Equity
CLASSROOM	Support for teachers implementing a new curriculum can include a district or regional PLC. Additionally, CSTA is a national organization for Computer Science teachers.
	CSTA National
	CSTA Western Massachusetts
	CSTA Greater Boston
	Districts may also refer to implementation guidance provided by DESE or others as helpful, such as the DESE IMplement MA Process (www.doe.mass.edu/instruction/impd/implement-ma-process/story.html).