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AAMC CURRICULUM INVENTORY

Guidebook to Building a Curriculum Map

A resource for curriculum teams

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Background

This workbook outlines the major steps to building your curriculum map. There is more than one right way to build a curriculum map. The workbook provides a suggested step-by-step process, but schools can also design their own approach. Once you assemble your curriculum mapping team, this workbook can be an effective exercise to work through together. The workbook can be useful for:

- New schools,
- Schools new to curriculum mapping, or
- Schools with an existing curriculum map that wish to take a fresh look at their data, and data quality.

This workbook supports medical schools in creating their local, school-specific curriculum map. Schools can use their local curriculum maps for several purposes, including to support accreditation efforts.

There are aspects to building your curriculum map that are clear (e.g., Is this standard required, yes or no?), but many questions are gray (e.g., What is the best way to organize our learning objectives?). As questions arise, the virtual Curriculum Community may be a helpful place to post your questions so that you can hear from other schools that have been through similar issues. You can sign up for the virtual Curriculum Community by registering from the AAMC communities home page.

In addition to this workbook and the virtual Curriculum Community, please visit our website at aamc.org/cir, or reach out to curriculum@aamc.org with questions.

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Preface

What data should I include in my curriculum map?

When creating your curriculum map, you may wonder how much of your curriculum you should model or to what degree. Some schools may have over 1,000 electives—should those all be in your curriculum map? Some schools may have one student on an MD/PhD track—should that be included in your curriculum map?

For internal purposes, you may want to document every possible path and course all your matriculated students could encounter. At minimum, it is recommended that you document your prototypical student for each year of the program and their *required* curricular experiences to complete your program. You may also want to document special tracks, extracurricular experiences, and special pathways a portion of your students may encounter as well. Your initial mapping effort should be focused on the required curricular content for the majority of your students, for each year of the curriculum. The more aspects of your curriculum and data you include, the more data can be used in reports. The priority is to document the prototypical student's experience first accurately, and then completely.

How the prototypical student's experience is constructed may vary depending on your technical platform. It can be constructed using a representative, actual student's curricular calendar or be built from a hypothetical student's curricular experiences to best represent your curriculum. If you are working with a vendor, we recommend talking with them about how curriculum mapping data is populated in their system.

Learning objectives are a rich source of data in reports

Learning objectives in a curriculum map may be located at several levels (e.g., program, course, event, thread, etc.). The more specific and descriptive your learning objectives are, the better the reports using your data can be. Descriptive, detailed learning objectives are also helpful for your students and faculty. Resources on writing effective learning objectives are available on the virtual Curriculum Community library collection on "learning objectives".

Curriculum mapping data goals: accuracy and completeness

As with all aspects of the educational enterprise, the details matter. For example, we have likely all been to a lecture that was disappointing. Perhaps too much content was planned, or the material was not presented in a way that engaged the audience, or the content did not meet the learning objectives. On the other hand, a lecture implemented well can be engaging, timely, relevant, and designed to meet its stated learning objectives. A curriculum map is similar in that it can be very useful if the data is accurate, if the reports are well structured and meaningful, and if there are processes in place to make evidence-based curriculum change decisions.

The MedBiquitous specifications provide one avenue that schools may choose to refer to when determining what data content and structure to include in a curriculum map. Schools may also choose to collect different or additional data, or to not collect data specified in the MedBiquitous specifications for their own curriculum mapping purposes.

Making the case for curriculum documentation

Curriculum mapping is important for several reasons, and given its importance, it is not a practice unique to medical schools. Schools in the K-12 arena have been documenting curriculum for years to help track students' learning and progress. We in the medical school arena can learn from fields outside health professions regarding curriculum mapping.

Curriculum documentation supports accreditation

Curriculum documentation can be referred to as a curriculum map, curriculum inventory, or curriculum database—the terminology may vary, but the purpose of the accreditation standard is to ensure that schools have a record of their curricula. Having a curriculum map is an accreditation requirement for medical school programs. The Liaison Committee on Medical Education (LCME) Data Collection Instrument (DCI) refers to this documentation as a curriculum database. The American Osteopathic Association (AOA) Commission on Osteopathic College Accreditation (COCA) refers to it as a curriculum map. Reports sourced from your curriculum mapping data may support aspects of the accreditation process.

Students need curriculum documentation

Even before accrediting bodies were requiring schools to show evidence of their curriculum maps, schools were documenting their curricula for several critical reasons.

For students, curriculum documentation helps them to know:

- Where they are in the curriculum,
- Where they are going, and
- Where they have been.

It helps put their learning into context, so students understand the long-term goals (e.g., program expectations and graduation requirements) and how their current learning fits within those goals.

At the same time, the amount of medical and other knowledge for practice deemed necessary for medical students is growing exponentially. Students may not remember every detail of every educational experience they have, and so, a searchable curriculum map is helpful for knowledge retention, building a study plan, and preparing for comprehensive assessments.

Faculty need curriculum documentation

Faculty responsible for a given content area or discipline need a searchable curriculum map to

understand:

- Where all the "touches" on a given topic exist,
- What other topics are next to this content area,
- What gaps or unintentional duplications may exist, and
- How the learning objectives for a content area relate to each other and to the program expectations.

Teaching faculty who may be coming into the curriculum to teach a session or two need to understand what information students already have on a given topic and what they need to be prepared for in the future.

For teaching faculty, it may be challenging to communicate why having a curriculum map, and the effort your schools put into building and maintaining it, is so important. To assist in that effort, the AAMC Curriculum Committee has created a "Curriculum Mapping: What's In It for Me?" presentation, available on the virtual Curriculum Community, that may be helpful for you to customize and share with your faculty, especially those involved in providing and using curriculum mapping data.

The school needs curriculum documentation

For the school, beyond meeting accreditation requirements, having a searchable curriculum map is helpful for responding to stakeholder inquiries. Students, applicants, senior leaders in the organization, members of the public, or others may need an answer to the questions "How much X does our medical school cover, how do we teach and assess it, and where is it within our curriculum?"

Schools can:

- Clearly outline their expectations for students;
- Ensure content has a logical sequence and degree of difficulty;
- Align learning objectives, instructional approaches, and assessment methods; and
- Identify gaps and unintentional redundancies.

Reports that a curriculum map produce are useful for supporting:

- Integration, including vertical and horizontal integration, where connections are made across topics and time;
- Program, course, and content area evaluation;
- Continuous quality improvement (CQI); and
- Evidence-based curriculum change.

A robust curriculum map can serve as a curriculum's telemetry, giving users an at-a-glance high-level view of the fulfillment of the program's educational program objectives, as well as when and how they are achieving these benchmarks, and identifying areas where work needs to be focused. Just like an ECG waveform can provide real-time information about the electrical function of the heart, a well-done curriculum map can provide an informative snapshot of curricular performance. Checking the

pulse of the curriculum supports ongoing continuous quality improvement!

Please see past Building Better Curriculum webinars related to Curriculum Evaluation, including "Comprehensive Curriculum Evaluation" and "Program Evaluation and the Integration of Curriculum Information."

Chapter 1: Getting started

Chapter 1 highlights

- Motivations and goals for your curriculum map
- Curriculum map data to collect
- Internal operations to support your curriculum map

A curriculum map is essentially a database—it is the documentation of a school's curriculum and can include many data fields.

Motivations and goals for your curriculum map
There are many reasons a school builds and maintains a curriculum map, as described in the Preface of this guidebook. A chief motivation for building a curriculum map is often accreditation, although there are many other purposes a curriculum map can serve, including:

- Program and course evaluation,
- Evidence-based curriculum change,
- Curriculum integration and alignment, and more.

It will be helpful for your school to identify why you are building a curriculum map —is it only for accreditation? Will you use your map to support your curriculum review process? Are there other goals you wish your curriculum map to achieve?

Outlining the motivations and goals for your school's curriculum map will help guide the choices you make and the resources you will need as you work through building your CI. It will be helpful to communicate to your school's faculty, staff, and stakeholders about what a curriculum map entails, the kinds of efforts it will take to build and maintain over the next year, and why your school's curriculum map is important.

Read: Read the Preface of this Guidebook, which focuses on making the case for curriculum documentation.

Task 1: Identify your school's goals for your curriculum map and share the Preface of this Guidebook, "Making the Case for Curriculum Documentation," with your school's stakeholders.

Curriculum data to collect

Collecting curriculum map data, ensuring it is accurate and complete, choosing the technical platform to house the curriculum map. . . all these steps will be a large-scale project over time.

Task 2: Develop an outline of the elements of your curriculum map based on the technical standards and which optional data fields, you need to include in your data collection to meet your goals and populate your curriculum map accurately and completely.

Internal operations to support your CI

From an operations standpoint, schools will need to marshal resources, people, and time for this project. One way to keep the project collectively on your school's radar is to consider making your curriculum map an institutional/school goal, perhaps integrating the curriculum map into individuals' performance goals this year.

There will likely be a team of people who contribute to your school's curriculum map. The first team member to identify is your curriculum dean. This person should be familiar with the curriculum overall. There may be more than one person at your school with curriculum oversight responsibilities, and even with dean-related titles.

Next, it will be important to identify additional members of the curriculum mapping team, as well as stakeholders who need to be informed about your curriculum map's progress. There may be faculty and staff at your school who already collect curriculum-related data, such as curriculum coordinators and course directors. We recommend communicating with all those involved so they are prepared to assist and provide data over the next year.

Once you identify your team, you may find that different or additional staffing roles are needed. While a curriculum coordinator may be able to hand off course content to a centralized database, there will need to be some degree of central oversight, which can help ensure that curriculum documentation practices across courses and people are consistent. The amount of staffing and time your curriculum map requires in this initial year is likely more than the amount of staffing and time it will take in subsequent years. However, some degree of faculty and staff full-time employment will be necessary to maintain the curriculum map over time.

Regarding staffing and roles, it may be helpful to review job descriptions of those with curriculum and curriculum mapping responsibilities at other schools. In the virtual Curriculum Community library, some helpful resources include "Medical School Organizational Charts – A Random Sample," and sample school job descriptions in the "Curriculum Operations" library folder. Make sure to click on the + sign next to "Curriculum Operations" to see sub-folders of job descriptions organized by responsibilities, like "curriculum mapping," or "clerkship administration."

Task 4: Make your curriculum map an institutional/school goal and integrate that goal into all identified curriculum map team members' individual performance goals this year.

In addition to formal staffing roles to support the curriculum map, you will need a technical platform . Schools can create an institutionally developed system or choose to work with a third-party vendor. We discuss technical platforms more in Chapter 2. A software program your school already has may offer curriculum map services. It will be important to consider your technical platform (e.g., server hosting, subscription service, staffing to manage the software, etc.) in your budget.

Chapter 1 key questions

1. What are our motivations for having a curriculum map? What do we want our completed curriculum map to be able to do? Essentially, what are our goals for our curriculum map?

Motivating factor	Is this a goal for our school's curriculum map? Yes/No	If yes, please describe.
Document our school's curriculum in a formalized manner.		
Make curriculum visible to students.		
Make curriculum visible to faculty.		
Support program evaluation and continuous quality improvement.		
Support course-level reviews.		
Support curriculum renewal.		
Support accreditation efforts.		
Promote curriculum research.		
Other		

2. What are the data fields (including required and optional data fields) that we must collect in order to meet our curriculum map goals, and populate our curriculum map accurately and completely?

3. Who will be our school's official curriculum dean I?

4. Who at our school may hold or collect curriculum map -related data currently? It will be helpful to keep a list.

5. Who at our school will need to be on our curriculum map team? Who at our school needs to be informed about our curriculum map's progress?

6. Share the Preface of this Guidebook with our curriculum map team, and consider sharing this project with other key faculty and stakeholders so they are aware it is underway.

7. What is our budget for staffing and technical support?

Chapter 2: Where will your curriculum map data live and thrive?

Chapter 2 highlights

- curriculum map's technical platform
- Initial curriculum map data quality planning
- MedBiquitous curriculum map specifications compliance

CI's technical platform

People can choose from a variety of types of homes to live in. Whether it is an apartment in a large city or a house in a sprawling suburb, the home a person picks will vary depending on their life's goals—e.g., a short commute, a big backyard, etc. So too with your curriculum map, there are multiple types of homes (i.e., technical platforms) you can choose. Each one may come with pluses and minuses.

To decide your curriculum map home for the future, we suggest going back to the goals you identified in Chapter 1 and considering which technical platform will help you to meet them. Perhaps you need a curriculum map that will be easily searchable by your students or one that is integrated with your students' calendars.

Task 1: Review your school's goals for curriculum mapping.

With each step in the curriculum map building process, it can be helpful to seek guidance (e.g., advice and lessons learned) from schools that have been successful in that area—this is especially true before choosing a technical platform. Remember that once you have your curriculum map data in a technical platform, removing it and starting over can be challenging if you change your mind down the road. Because a curriculum can change rapidly and regularly, you will want a system that can adapt as your curriculum evolves.

Task 2: Contact other schools to collect lessons learned about their technical platforms.

A relatively simple system, like an Access database, may be sufficient to meet your school's goals. Or you may want a system with more bells and whistles. Referring to the goals you identified in Chapter 1 can help narrow your options. If you are curious about pursuing an institutionally developed system, consider reaching out to the curriculum community to get feedback from schools that have developed their own systems.

Initial curriculum map data quality planning

The goal of any data collection is to have usable data for searches and reports. You may want to think about the types of curriculum reports and searches you wish to have. You can view national aggregate reports on the Curriculum Reports webpage

As an example, say your school has recently completed a curriculum renewal effort where increased use of case-based learning (CBL) was a goal. , you may want to double-check that your curriculum before and after the curriculum renewal effort is consistently and accurately tagged with CBL according to the definition provided, so that you can then measure your school's progress in increasing the amount of CBL in the curriculum.

A list of guidelines for your school's curriculum map efforts will help support data quality and facilitate useful curriculum reports. Examples of school guidelines could include:

- **Spelling out school-specific acronyms:** Universally known acronyms, such as ACLS, may be easily searchable and known, but school-specific acronyms can be difficult to identify for curriculum reports. For example, if we find ACE in the curriculum map, does that refer to adverse childhood events or ACE inhibitors? At one school, ACE could refer to acute care for the elderly, but unless those words are spelled out, finding all the relevant elder-care curricula might be challenging.
- **Checking for spelling errors:** Many software programs have spell-check built in, but even in those cases, it would be helpful to confirm that the system is effectively identifying spelling errors. For example, the word *clinical* can be easily misspelled.
- **Establishing a consistent, standardized way to refer to your content in each topic:** For example, will your curriculum map have the words *cancer, neoplasm, oncological,* and *tumor,* or will you provide your faculty and staff a list of terms to use consistently across your curriculum map? You may use whichever and however many terms you like, but remember that you need to keep all the terms you use in mind when creating a data search query once your map is built. The AAMC keyword list can be a useful resource to ensure consistency across some terminology in your curriculum map. More details regarding keywords are provided further along in this workbook.

Task 3: Begin drafting an institutional style guide for curriculum documentation and consider including the AAMC keyword list (see Appendix II) as part of your plan.

Chapter 2 key questions

1. What technical platform will house our curriculum map data?

2. What kinds of curriculum searches and reports do we want to be able to produce?

3. Now that we have some additional information and insight, do we need to make any refinements to the list of data we intended to collect, from our worksheet in Chapter 1, question 2?

4. What will our school guidelines be for consistent curriculum documentation?

Chapter 3: Program objectives drive the curriculum

Chapter 3 highlights

- Program objectives' role in the curriculum
- Considerations in finalizing your program objectives

Program objectives are the expectations or outcomes students must meet by graduation. Schools can craft their own program objectives from scratch or use an existing model either as is or as inspiration. One such model is the Physician Competency Reference Set (PCRS) (see Appendix III). Schools can use the PCRS as inspiration or as is for their own program objectives but are not required to do so. Program objectives can be tailored to a school's mission and vision, culture, and patient populations.

Program objectives' role in the curriculum
Program objectives govern the curriculum. They drive the content, course- and event-level learning objectives, instructional and assessment approaches, and more. Because the program objectives drive the entire curriculum, it is important to make sure your program objectives:

- Are up to date;
- Accurately capture the required curricular content for graduating students;
- Align with your school's mission and vision, culture, and patient population;
- Are written in descriptive, specific, outcomes-based language; and
- Have been reviewed and approved by your curriculum committee (or similar oversight body).

For example, perhaps your school has a desire to deliver leadership curriculum content to students and has identified this goal in its mission and vision. Are leadership skills represented in some way in your program objectives? If not, it will be difficult to link course- and event-level learning objectives regarding leadership skill development to a program objective.

Gaps such as this will be easier to identify once you have a curriculum map built. In the meantime, a review of the program objectives would be helpful to identify and address any potential gaps before you begin the in-depth work of building your curriculum map.

Task 1: Review your school's program objectives.

One way to identify curriculum gaps before your curriculum map is built is to map each of your current program objectives to a PCRS competency statement. This linking of program objectives to the PCRS is *recommended*, so that you could potentially compare program objectives with other schools, as schools may use diverse language and models when crafting their program objectives. Although the linking of a school's program objectives to the PCRS is encouraged, schools are not required to use the PCRS within their program objectives language, although they may choose to do so.

For example, perhaps while you are linking your program objectives each to a PCRS competency

statement, you find that you have very many program objectives mapped to the PCRS domains for patient care (1.0) and knowledge for practice (2.0) but very few program objectives across the other PCRS domains (e.g., practice-based learning and improvement, interpersonal and communication skills, etc.). This may be intentional for your curriculum, but if not, identifying these gaps can inform your analysis of whether your current program objectives meet your school's needs. Perhaps you note that your program objectives do not have any links to the PCRS domain for interprofessional collaboration (7.0), although interprofessional practice is identified in your school's mission statement. In this hypothetical case, the discrepancy noted between your school's mission and program objectives, as well as the gap you identified by linking program objectives to the PCRS, may prompt further discussion and, potentially, edits to your program objectives, mission statement, or both. If and how you choose to address the gaps you identify in your program objectives will be helpful to document and bring to your curriculum committee or similar oversight body, which in turn may support your accreditation efforts.

Task 2: Identify links between each of your program objectives and one or more PCRS competencies.

Considerations in finalizing your program objectives

When organizing your program objectives, you may nest your program objective statements in a given domain.

Domains can be helpful for both organizing and succinctly communicating the content of your curriculum to key stakeholders, such as students, applicants, university leadership, the general public, and more. There are a variety of models you can use if you would like to organize your program objectives by domains. For example, the PCRS competencies are organized according to eight domains—patient care, knowledge for practice, practice-based learning and improvement, interpersonal and communication skills, professionalism, systems-based practice, interprofessional collaboration, and personal and professional development—with individual competency statements within each domain category.

Task 3: Consider if you would like your program objectives organized by domain.

Because the program objectives are the cornerstone of your curriculum, spending time and effort to get them right will make your subsequent curriculum map work easier. Edits to your program objectives should be made carefully and thoughtfully, as each edit will have a trickle-down effect on your curricular content, course- and event-level learning objectives, instructional and assessment approaches, etc.

There are a variety of ways to write learning objectives well. If you are editing your program objectives and looking for guidance, there is a curated collection of resources regarding effective learning objectives, as well as school sample program objectives, in the virtual Curriculum Community library collection on "learning objectives".

It will be helpful to have your curriculum committee or similar oversight body approve the current program objectives and to establish a periodic review of the program objectives and their related

data once your curriculum map is built.

Task 4: Bring your finalized program objectives to your curriculum oversight body.

Once your program objectives are established, you may consider assigning them meaningful ID codes. using meaningful ID codes for your program objectives can help you recognize and sort your curriculum content. For example, if you have three program objectives related to interpersonal and communication skills, meaningful ID codes could be COMM-1, COMM-2, and COMM-3. Numerical ID codes such as 98373747 would not be as meaningful since the number does not necessarily tell you what portion of the curriculum it relates to. How ID codes are built and managed will vary depending on the technical platform you use.

Task 5: Consider assigning meaningful ID codes to your program objectives.

Chapter 3 key questions

1. What models, if any, did we consult or use as inspiration when drafting our program objectives, and how did we use them?

2. Are there any curriculum gaps in our program objectives that we need to address with edits? Were any gaps identified through our PCRS linking process? Do our program objectives accurately capture the required curriculum?

3. Are our program objectives aligned with our school's mission, vision, culture, and patient population?

4. Are our program objectives written in descriptive, specific, and outcomes-based language?

5. Are our program objectives up to date and regularly reviewed and approved?

6. What is our final, edited, and approved program objectives list, and do we have up-to-date links to the PCRS competencies?

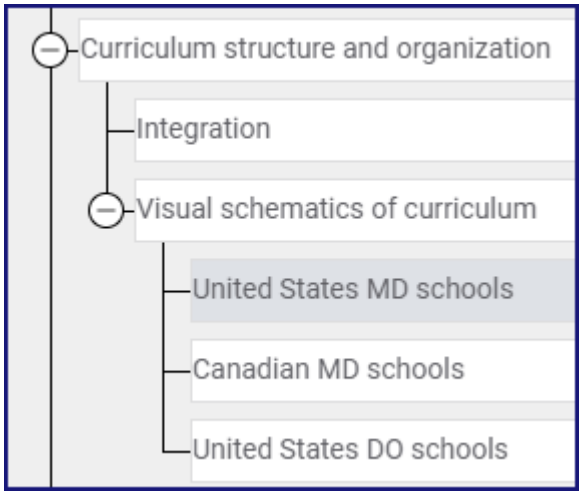
7. What is our system for assigning ID codes to our program objectives? What is our system for organizing our program objectives, perhaps by domain?

Chapter 4: Determining your curriculum map organizational strategy

Chapter 4 highlights

- Curriculum visual schematics
- Curriculum map organizing principles to create a list of courses

Curriculum visual schematics



Typically, schools have visual schematics to represent their curricula to students, applicants, and the public. A listing of school curriculum schematics is available on the virtual Curriculum Community library. In the community, you can navigate to "Library," then "Curriculum structure and organization," then "Visual schematics of curriculum." Click on the + signs to see more folders and resources. You will see sub-folders for different types of medical schools. You can make sure your school is listed, make sure the link is up-to-date, and explore other schools' visual schematics of curriculum. These resources may help you design a visual schematic to represent your curriculum if you do not already have one or if you need to revise your current one. If you need help adding or updating your school's visual schematic of curriculum on the community, please reach out to curriculum@aamc.org.

The MedBiquitous CI standards, allow for multiple ways to model your data, so outlining your visual schematic in detail will help drive how you organize your content according to the standards.

Task 1: Design your curriculum's visual schematic, and confirm it is accurately listed on the AAMC virtual Curriculum Community library.

curriculum map organizing principles to create a list of course/modules

There are a variety of approaches that schools use to organize their curricula—by year (e.g., year 1, year 2, etc.), by phase (e.g., phase 1, phase 2, etc.), with courses or blocks, by longitudinal threads, and more. Once you determine how you would like your curriculum map organized (e.g., phase 1 = year 1, phase 2 = year 2, etc.), you can decide how many and which courses, modules, or threads to nest underneath each phase.

Task 2: Determine the number of phases you need to accurately represent your curriculum and how each should be labeled (e.g., phase 1 = year 1).

The goal is to minimally include all required curriculum content (i.e., required courses that all graduating students take). You may also document optional courses, special tracks, extracurricular activities, etc. In your curriculum map, you can have required courses with both required and optional events in them, as well as optional courses with both required and optional events in them.

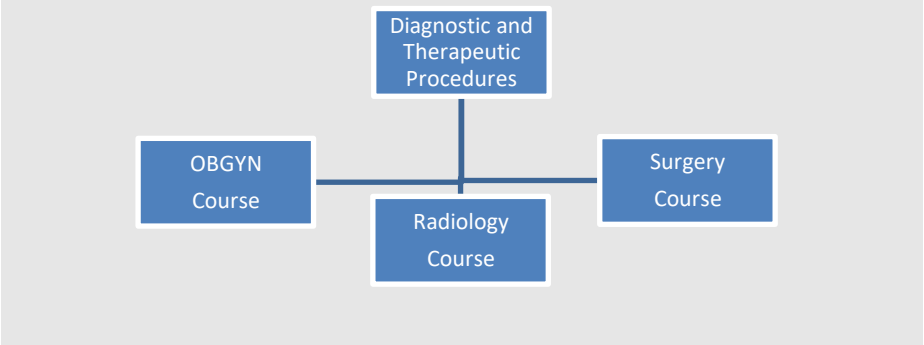
When determining which courses, modules, and threads to include in your curriculum map, think about your typical student and try to replicate the experience that most of your students will have. The goal is to paint an accurate and complete picture of the typical, hypothetical student for each year of your curriculum.

In the MedBiquitous standards, *sequence block* is the term used to describe courses, clerkships, modules, and other organizational approaches to curriculum content.

Deciding which content to include in your curriculum map may be a matter of input and output. Ideally, all of your school's curriculum would be documented in the same manner, but that may not be feasible. For example, if your school offers over 1,000 electives, it may not be realistic to document each course to its fullest extent in your map. Instead, perhaps you could prioritize the top 25 electives with highest enrollment among your students. Ultimately, the curriculum map goals you drafted in Chapter 1 should drive the choices you make in terms of which elements of the curriculum to document.

Task 3: Determine how many and which courses, clerkships, modules, blocks, and threads need to be within each of your phases. These should accurately and completely represent the curriculum experience of a typical, hypothetical student.

A feature of the curriculum map standards is the concept of *nested course/modules.* These allow you to represent a hierarchy in your map. For example, perhaps your curriculum will have a course/module for "diagnostic and therapeutic procedures" and, under that, separate course/module (e.g., for "surgery," "OBGYN," etc.) The use of nested course/modules is not required in your curriculum map, but they can be a beneficial tool for accurately representing the organizational structure of your curriculum.



In this example, the courses in OBGYN, radiology, and surgery are all "nested" in a course/module (i.e., sequence block in the MedBiquitous specifications) of diagnostic and therapeutic procedures, to show they are organized together in a deliberate manner. Each of the "nested" courses have their own dates, events, instructional approaches, and more.

The use of "nested" course/modules is also a popular approach for organizing groups of courses, like clinical clerkships. More information about documenting clinical clerkships using a "nested" approach is described in Chapter 5 of this Guidebook.

Task 4: Determine whether and how nested course/modules can help you to accurately represent the hierarchy of curriculum data organization in your curriculum map.

Keep in mind that each course, module, theme, thread, etc. that you enter now on your list for the curriculum map needs additional documentation. This documentation will include data such as event dates and times, instructional and assessment methods, learning objectives, and so on. You may find that there is curricular content (courses, modules, etc.) on your list whose details are not centrally located (e.g., the learning objectives are on the faculty's PowerPoint slides, event dates/times are on a PDF syllabus, etc.). Thus, it may be helpful to plan some extra time for gathering this kind of data across sources.

Task 4: Begin to think ahead about where the follow-up information you need for each course/module in your curriculum map may be. You will need to collect that information in a centralized location.

Chapter 4 key questions

1. Do we have a visual schematic for our curriculum? Is it up to date and reflective of what we want our curriculum map's structure to look like?

2. What is our organizational approach for our curriculum map? How many phases will we have, and what will we call them?

3. Based on our curriculum map goals identified in Chapter 1, what is our list of courses, modules, and threads that we want to include in our map, and how will these be organized within our phases?

4. How will we use the "nested" course/module approach to accurately represent our curriculum?

Chapter 5: Course-level details for your curriculum map

Chapter 5 highlights

- Initial course details
- Representing rotational clerkships
- Representing integrated clerkships
- Representing elective and selective courses
- Course-level learning objectives

Initial course details
Once you have your organizing principles and content outline determined from Chapter 4, you can build out the details. For each course, clerkship, module, block, or thread that you include in your curriculum map, the field within the curriculum map standards you will use is the course/module. It may be helpful to refer to the Curriculum Glossary (see Appendix IV) for definitions of terms used below. For each course/module you document in your curriculum map, the details you will need at this stage include:

- **Title:** Sample titles include "cardiovascular course," "patient safety module," "internal medicine clerkship," etc.

- **Course/module type:** This includes:
  - Whether the course/module is required or optional:
    - Required course/modules are those a student must complete to graduate. "These [course/modules] are stipulated as necessary to be done for all students in order to meet the expectations of the program" (Merriam-Webster, 2019).
    - Optional course/modules are those that "allow students to self-elect for participation" (Rabow et al., 2016) in the class (Agarwal et al., 2015). Optional electives, for example, could include research projects or away rotations.
  - Whether the course/module is a clerkship or not:
    - If a clerkship, further determine whether the clerkship is rotational or integrated (more details on rotational clerkships are described below).

- **Start and end dates:** your course start and end dates will generally fall between July 1, 2021, and June 30, 2022.

  Although your curriculum map reporting dates will be July 1, 2021, through June 30, 2022, it is acceptable if some content within your curriculum map (e.g., phases, courses) falls outside those bounds. For example, while the academic year begins July 1, 2021, you may have clerkship courses that start in May 2021, and you should include them in your curriculum map.

- **Duration:** This is documented in days (e.g., 20 days).

  When determining how many days to document, days upon which learning is *expected* to occur should be counted. For example, it is easy to decide to document weekdays when there is learning scheduled to occur, like lectures or patient experiences. But what about weekends? Holiday breaks? If there are days, such as weekends, when there is no scheduled learning, *but learning is expected*, those days should be counted when calculating the days per course/module.

  An example might be giving students no scheduled learning the day before a big exam – there are no new lectures, but the students are expected to be studying, thus learning is expected to occur, and that study day should be counted when calculating the days for that course/module.

Task 1: Determine the initial details for your courses, clerkships, modules, threads, and/or blocks.

Representing rotational clerkships

Rotational clerkships are ones that repeat throughout the year: Each student experiences the clerkship once, but the clerkship repeats multiple times so that a cohort of students can enroll. For rotational clerkships, the start and ends dates may span a long period of time, but the duration for a given student may be relatively short. For example, a psychiatry clerkship may run from July 1, 2021 (start date), through June 30, 2022 (end date), but for each student, the duration of the psychiatry clerkship is 4 weeks.

Your curriculum map submission should represent one typical, hypothetical student's experience in each year of your curriculum. So, there should only be one instance of each rotational clerkship in your curriculum map, if this is true for what one student would experience.

How these curricular experiences populate in your curriculum map can vary depending on your technical platform. If your technical platform pulls your data from *all* students' calendars, you could have multiple instances of the same rotational clerkship in your curriculum map, which would be inaccurate. If, for instance, your rotational clerkships are entered 12 times instead of once, curriculum map reports will reflect 12 times more content in a given content area than actually exists. One way to address this problem is to create a typical rotational clerkship (e.g., typical psychiatric clerkship) and use only that typical clerkship in your curriculum map, rather than pulling data from all students' real calendars.

Below are two examples of rotational clerkship models using the nested course/module concept discussed in Chapter 4 of this Guidebook; the first example illustrates clerkships scheduled in no particular order, the second example illustrates clerkships scheduled in a particular order.

Rotational Clerkship Model – Example 1
Students take various clerkships in no particular order

In this clerkship model example, clerkships are run throughout the year (e.g., July 1 – June 30), however each student's experience in each clerkship is a shorter period of time (e.g., 4 weeks in the neurology clerkship). In this example, there are a series of clerkships, but the order in which students take them varies and is not prescribed. This model illustrates the elements and attributes in the MedBiquitous specifications that should be applied.

Start date: 2021-07-01
End date: 2022-06-30
Duration: 230 days (46 weeks)
Required: Required

Minimum: 8
Maximum: 8
Order: Unordered
Is this a clerkship? No (because this is the *container*, not the actual clerkship course)

Neurology Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Psychiatry Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Internal Medicine Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 40 days (8 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Surgery & Peri-operative Services Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 40 days (8 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

OBGYN Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Pediatrics Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Family Medicine Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Emergency Med Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Is this a clerkship? Yes
Clerkship type: Rotation

Rotational Clerkship Model – Example 2
Students take clerkships at various times and in a particular order

In this clerkship model example, clerkships are run throughout the year (e.g., July 1 – June 30), however each student's experience in each clerkship is a shorter period of time (e.g., 4 weeks in the neurology clerkship). In this example, there are a series of clerkships, and while students take them at various times, *there is a prescribed order*. For example, whether a student takes the neurology clerkship in August or February, the psychiatry clerkship always comes next.

Start date: 2021-07-01
End date: 2022-06-30
Duration: 230 days (46 weeks)
Required: Required

Minimum: 8
Maximum: 8
Order: Ordered
Is this a clerkship? No (because this is the *container*, not the actual clerkship course)

Neurology Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Order: 1
Is this a clerkship? Yes
Clerkship type: Rotation

Psychiatry Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Order: 2
Is this a clerkship? Yes
Clerkship type: Rotation

Internal Medicine Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 40 days (8 weeks)
Required: Required
Order: 3
Is this a clerkship? Yes
Clerkship type: Rotation

Surgery & Peri-operative Services Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 40 days (8 weeks)
Order: 4
Is this a clerkship? Yes
Clerkship type: Rotation

OBGYN Clerkship
Start date: 2021-09-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Order: 5
Is this a clerkship? Yes
Clerkship type: Rotation

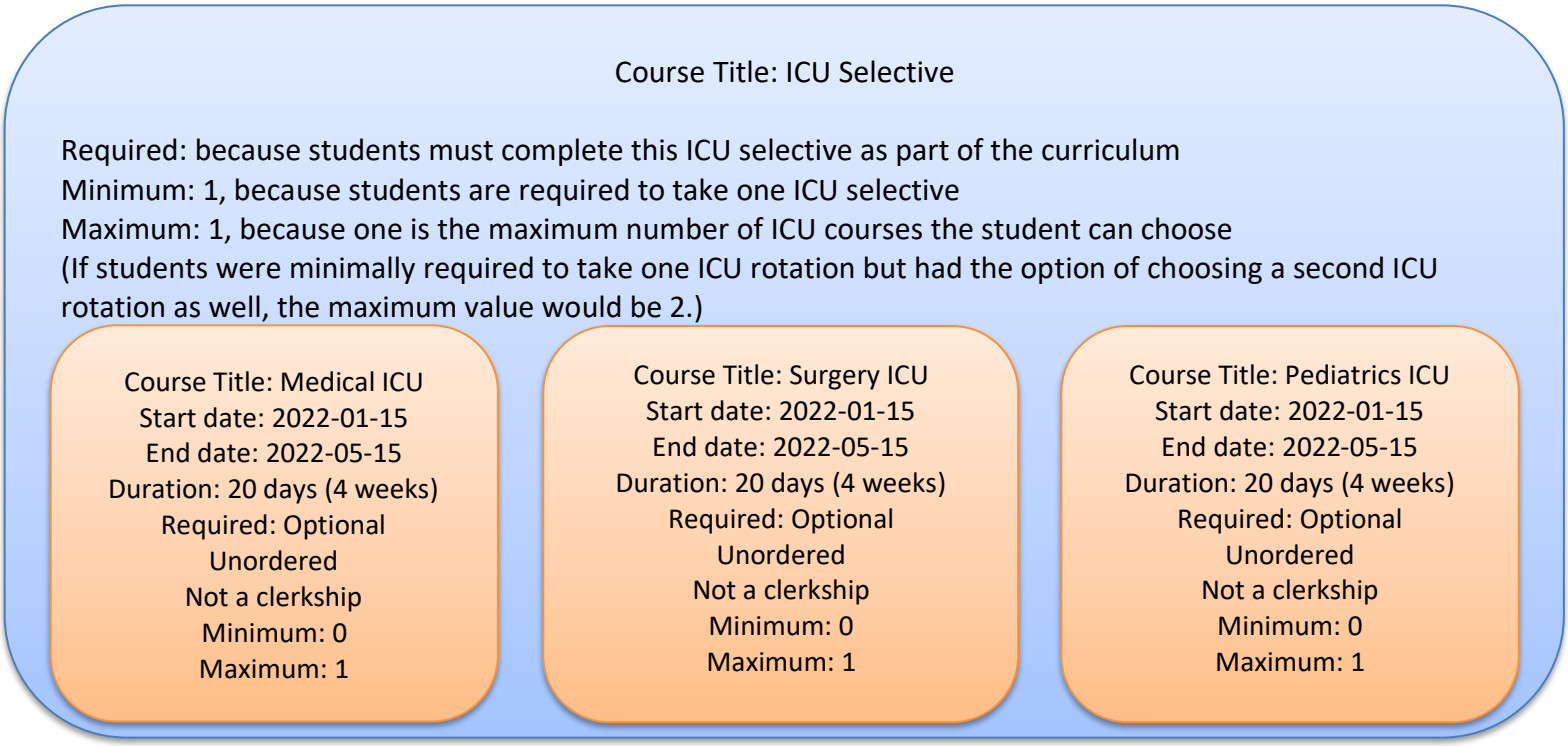
Pediatrics Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Order: 6
Is this a clerkship? Yes
Clerkship type: Rotation

Family Medicine Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 30 days (6 weeks)
Required: Required
Order: 7
Is this a clerkship? Yes
Clerkship type: Rotation

Emergency Medicine Clerkship
Start date: 2021-07-01
End date: 2022-06-30
Duration: 20 days (4 weeks)
Required: Required
Order: 8
Is this a clerkship? Yes
Clerkship type: Rotation

For example, perhaps students are required to complete one intensive care unit (ICU) rotation. The school offers ICU rotations in medicine, surgery, and pediatrics. Students therefore must choose from these three ICU rotations. There is some degree of choice (e.g., Which ICU rotation is available when a student wants to take it and will best prepare the student for their future career?). There are also limitations on that choice—students can choose only one of only these three ICU options. Another common example is sub-internships. Perhaps all students at your school are required to complete a sub-internship, but there are multiple sub-internship options students can choose from (e.g., medicine, surgery, pediatrics, etc.).

How will you model these types of selective courses in your curriculum map? Recall that the goal is both to model what a typical, hypothetical student would experience in the curriculum (e.g., must take one ICU rotation) and to model your curriculum completely and accurately (e.g., can choose from three ICU selective options). Here is how the selective ICU course described above could be modeled using the nested course/module concept introduced in Chapter 4.



Task 4: List all courses, modules, clerkships, etc. that are optional (e.g., electives, selectives), and determine how to model them accurately in your curriculum map, considering the examples above.

Course-level learning objectives

Each of the courses/modules and clerkships in your list will have learning objectives, and there are many questions to consider before finalizing the course-level learning objectives for inclusion in your curriculum map.

Are there documented learning objectives for each course/module? Are any missing? Do the learning

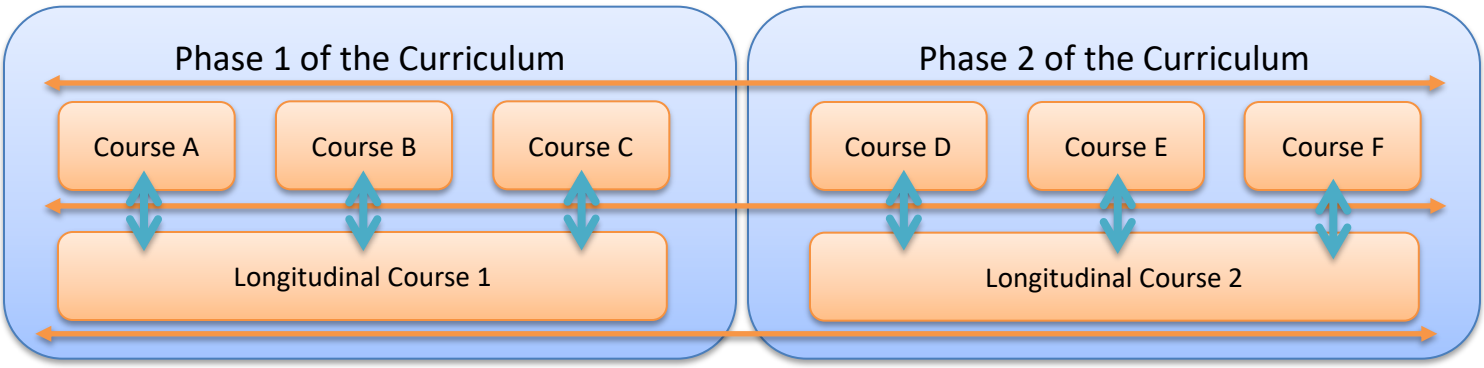
objectives reflect the content of the course/module? Do they reflect relevant and up-to-date medical and other literature? Are the learning objectives written in descriptive, specific, outcomes-based language?

It is important to confirm that the learning objectives at the course level collectively meet your school's goals, i.e., the program objectives. Remember that the program objectives, discussed in Chapter 3, drive the curriculum. For example, perhaps for your pre-clerkship courses, a collective goal is that all the course-level learning objectives add up to preparedness for the clerkship experience. Or perhaps course learning objectives collectively need to prepare learners for a licensing exam. Whatever your curriculum goals are, it is helpful to write them down and then consult your learning objectives to ensure they are collectively meeting your goals.

It may be useful to engage content experts both to review the content of the learning objectives and to judge the relatedness of the learning objectives to each other and to your school's program objectives and goals. For example, if one of your goals for the pre-clerkship learning objectives is to collectively prepare students for clerkships, perhaps clerkship directors should be consulted in reviewing the learning objectives.

Task 5: Gather draft learning objectives for each course, module, clerkship, etc. that you need to include in your curriculum map.

Once you have drafted learning objectives for each course/module, there are additional questions to ask. Are these learning objectives the appropriate degree of difficulty, and do they build upon each other over time? Consider alignment of your learning objectives *within* courses and modules, *across* and *between* courses and modules, and *across* time. In the simplified, limited example below, the colored arrows represent how vertical and horizontal alignment and integration of content (in this



case, learning objectives) could be considered. Some schools use their visual schematic of curriculum to very effectively illustrate where in the curriculum content is purposefully integrated; it may be helpful to review some sample curriculum schematics is available on the virtual Curriculum Community library.

At this stage, you can check to make sure that learning objectives are not too easy or too challenging for where the students will be at a given phase of the curriculum. If the learning objectives relate to

each other across courses and over time, there will be limited duplication of content presented to students and fewer gaps in content coverage.

For resources on writing learning objectives with effective language, please see the virtual Curriculum Community library collection on "learning objectives". Whatever approach you choose, it will be helpful to write down and broadly share your school's guidelines so that faculty take a consistent approach across courses when editing their learning objectives. Offering faculty development in writing effective learning objectives using your school's guidelines is another way to support faculty through this process. You may also want to establish a centralized clearinghouse to review learning objectives to ensure quality. This will be especially important if you have multiple authors contributing to your learning objectives.

Again, program-level learning objectives drive the curriculum. Any learning objectives at the course/module level should be driven by your program objectives. However, there are likely some commonalities in the wording/content of learning objectives schools need, and there may be sources you can refer to for sample learning objectives. Some professional societies for clinical areas have recommended learning objectives. For example, the Association of Directors of Medical Student Education in Psychiatry has a Clinical Learning Objectives Guide for Psychiatry Education of Medical Students organized by unit (e.g., "clinical skills"), topic (e.g., "history-taking, examination, and medical interviewing"), and learning objective (e.g., "elicit and accurately document a complete psychiatric history, including the identifying data, chief complaint, etc."). If the sources are up to date, evidence based, informed by content experts, and well written, it may be more efficient to use them as inspiration rather than starting from scratch. As you choose which resources or samples to use or consult, keep a written record for each course/module—this may be helpful for your curriculum committee (or similar oversight body) when conducting curriculum evaluation and course reviews.

Task 6: Finalize your course-level learning objectives after additional considerations.

Once edits to the learning objectives are finalized, it is time to link program objectives to course objectives. This applies to all courses, clerkships, and modules—

It may be helpful to establish thresholds for what warrants a link between a course objective and a program objective—if a very broad approach is taken, such that every course objective is linked to many program objectives, it may be difficult to identify your curriculum content in reports. At least one link between each course-level learning objective and a program objective should be documented.

At this point, you should evaluate if any gaps are identified. Are there course-level learning objectives that do not relate to a program objective? Are there any program objectives with few or no course-level learning objectives to link to? It will be helpful to address these gaps now, before further curriculum map content is developed, as a school's program objectives and related learning objectives drive content. Keep in mind that number of learning objectives is not necessarily equal to amount of exposure; what matters at the end is not the amount of objectives but the overarching

representation of their content at the program level that fits with the school's mission and vision.

Task 7: Create links between program-level and course-level learning objectives, and address any gaps identified.

If you have nested your program objectives in domains (e.g., patient care, knowledge for practice, etc.), it may be helpful to monitor all the course objectives linked up to each domain for breadth and depth. The goal is not necessarily to have an equivalent amount of content in each program objective domain but to make sure the spread of content is intentional.

This also is the time to choose whether you will assign ID codes to each course learning objective. Recall the use of meaningful ID codes described in Chapter 3 when discussing program objectives. The same principles can now be applied if you choose to design a meaningful system for course-level learning objective ID codes.

Task 8: Analyze how your course-level learning objectives link up to your program objective domains (if you have them) and consider assigning ID codes to each course-level learning objective.

Chapter 5 key questions

1. Do each of our courses, clerkships, modules, and threads have a title? Have we documented whether they are required or optional? Have we documented their start dates, end dates, and durations in days?

2. Have we created a typical course, or some other approach that will accurately and completely model our curriculum, for our rotational courses such as clerkships? Do we have any integrated clerkships to model in our curriculum map? How can we leverage the "nested" course/module approach to document these clinical learning experiences?

3. Do we have a list of all our optional courses, modules, clerkships, etc., including optional electives? Do we have any for which the selective model (some choice in what students can choose, but limitations on those choices) applies, such as sub-internships? What modeling strategy will we use to completely and accurately represent the breadth of what our curriculum offers and the experience of a typical, hypothetical student?

4. For our course/module-level learning objectives:

    a. Are there documented learning objectives for each course/module?
    b. Do the learning objectives reflect the content of the course/module?
    c. Do the objectives reflect relevant and up-to-date medical and other literature?
    d. Are the learning objectives written in descriptive, specific, outcomes-based language?
    e. Have we consulted our content experts for their input on the learning objectives?
    f. Do these learning objectives add up to meeting our school's program objectives?
    g. Are these learning objectives the right degree of difficulty?

h. Do these learning objectives build upon each other over time?
i. Are these learning objectives aligned across our courses/modules?
j. What are our school's standards and guidelines for writing learning objectives, and how are we disseminating that information to our faculty?
k. How are we ensuring consistency in the quality of our learning objectives across courses/modules and across multiple authors?
l. Have we consulted any sample or model learning objectives, such as those from clinical professional societies?
m. Does each course/module learning objective have at least one link to a program objective? Have we identified any gaps based on these links that need to be addressed?
n. If our program objectives are nested in domains, does our coverage of content for breadth and depth play out as expected?

Chapter 6: Maintaining and using your curriculum map from year to year

Chapter 6 highlights

- Internal uses of curriculum map data and ongoing resources
- Internal procedures and oversight bodies
- Centralized and decentralized processes

Internal uses of curriculum map data and ongoing resources
Recall the discussion of your school's motivations and goals for having a curriculum map, identified in Chapter 1. Once your curriculum map is established, your school may have a variety of uses for your data that align with the motivations and goals you earlier identified. Possible uses of data include:

- **Program evaluation:** evaluating the amount of student time spent in each domain of content; evaluating the overall mix of instructional and assessment methods; identifying gaps or unintentional redundancies in the curriculum; evaluating the progression of learning objectives from events to courses and, ultimately, to the program objectives; etc.
- **Course evaluation:** evaluating the alignment of course objectives, instructional methods, and assessment methods; evaluating the number, duration, and content of teaching events; etc.
- **Accreditation support:** using curriculum map data to populate accreditation forms, identifying curriculum weaknesses to address before a site visit, maintaining accreditation standards, etc.
- **Continuous quality improvement:** evaluating progress towards meeting a curricular goal, such as increasing the amount of CBL in the curriculum; identifying degree of integration of curricular threads throughout multiple courses; etc.
- **Curriculum renewal:** identifying areas where new curriculum content can be placed and less relevant curriculum content can be discontinued, etc.
- **Curriculum benchmarking:** comparing the percentage of your curriculum's time spent in lecture to national norms, comparing the percentage of your curriculum's time spent in simulation to national norms, etc.

Perhaps you plan to use curriculum map data to complete accreditation forms or demonstrate accreditation compliance. When medical schools think about accreditation, the LCME for MD schools and the AOA COCA for DO schools are usually the first types that come to mind. However, there may be additional accrediting agencies for which you find curriculum map data useful. For example, the Higher Learning Commission accredits universities in a select number of US states; it may be that your university's accrediting needs can be supported by your medical school's curriculum map.

Perhaps your school wishes to establish a baseline for future curriculum renewal and change or your curriculum committee would like to choose an annual goal for its curriculum review.

Outlining how you plan to use your curriculum map data for a variety of purposes will help determine which institutional stakeholders need to utilize it and, therefore, what kinds of procedures to maintain and update it are required.

Because a curriculum is adapting and changing all the time, having an accurate and complete curriculum map at any given point is a tall (or perhaps impossible) order. It could be that yesterday, your curriculum map was perfectly accurate, but today, one faculty member must adapt learning objectives in their lecture to the students' needs and, as a result, edits to your map are necessary.

Edits to your curriculum map will occur on a regular basis because of these natural and necessary changes to the curriculum. The map is not an effort where you can build it and forget it—it will require attention and resources on an ongoing basis. As your curriculum map matures from one year to the next, so too will the amount of data grow, such that eventually year-to-year comparisons of your curriculum will be possible. The thorough documentation you do now will facilitate analysis of curriculum change over time.

By identifying all the ways in which your school wishes to use curriculum map data, as well as all the regular reviews and updates that will be needed for your curriculum map data, you can plan the ongoing resources that will be necessary to maintain it. Those resources will include curriculum faculty and staff, IT infrastructure and staff, and software licensing (if applicable).

Task 1: Refer to your curriculum map motivations and goals from Chapter 1 and identify all your school's uses for curriculum map data. One of these uses is annually sharing data with the AAMC.

Internal procedures and oversight bodies

The guidebook chapters you have reviewed thus far should have given you a sense of the kinds and amounts of data you will be managing. While perfection may not be attainable, it is possible to establish internal procedures and processes to maintain your curriculum map.

The most direct method to ensure that the curriculum map is regularly updated and utilized is to incorporate it into your curriculum procedures and overseeing bodies. For example, consider how and how often the following groups may need to review, update, and utilize data from the curriculum map:

- Your medical education and/or dean's office;
- Your curriculum leaders and administrative staff;
- Your curriculum oversight bodies, such as a curriculum committee;
- Your course directors and curriculum planners; and/or
- Your teaching faculty.

There may also be stakeholders who could benefit from some synthesized curriculum map data reports but are not responsible for contributing to the curriculum map, such as your students, applicants, or institutional leaders. It is up to you to determine how you wish stakeholder groups to have knowledge or awareness of portions of your curriculum map.

Task 2: Identify which stakeholder groups and existing bodies and procedures need access to curriculum map data and/or reports.

From outlining how you wish these groups to use curriculum map data, you may find that additional or different oversight bodies or procedures are required. For example, perhaps your current course evaluation process does not incorporate all the data fields you would like to review, and so, the course evaluation form needs to be edited. Perhaps your curriculum committee's policies and procedures need to be updated to incorporate curriculum map data into its decision-making processes. Are your curriculum committee's existing membership, charge, and cadence of meetings sufficient to utilize curriculum map data? There may be some aspects of the curriculum map data that are more efficiently reviewed asynchronously via reports or visualizations and other aspects for which a committee meeting or longer retreat would be best.

It may be useful to consult scholarly literature around curriculum committee management, as well as reviewing school samples of curriculum committee governance, policy, and procedure documents. These resources are available in the virtual Curriculum Community library collection for "Curriculum committee policy, practice, and governance."

Task 3: Identify any different or additional oversight bodies or procedures that need to be updated to include use of curriculum map data and reports.

Over time, your data will comprise thousands to millions of data points, and it may not be efficient or necessary for an overseeing body to review every aspect of your curriculum map. It will, however, be necessary for *someone* to review and ensure the accuracy of each component of your curriculum map. Once you answer the questions above, you will have a sense of who needs which parts of your curriculum map and when. Then, you can develop your maintenance procedures to ensure that your mapped data is accessible and up to date for each of your stakeholder needs.

We recommend outlining each piece of curriculum map data, who is responsible for updating it, and how often. It also may be helpful to outline your existing curriculum evaluation documents (e.g., course evaluation forms), procedures (e.g., curriculum committee reviews), and meetings to determine which ones need to be adjusted to include curriculum map data.

Task 4: Identify a person/role responsible for updating each piece of curriculum map data, and document how often the curriculum map data needs to be updated.

Centralized and decentralized processes

In Chapters 1 and 5, we alluded to centralized and decentralized approaches to collecting and reviewing curriculum map data. Now that you have worked through more aspects of how you will build and use your data, it is time to make decisions about the degree to which your school will have a centralized and/or decentralized process.

In a decentralized approach, curriculum data comes from a variety of sources and people. The decentralized approach is a more distributed model. Its chief advantage is that those with the most knowledge of and familiarity with a given aspect of the curriculum have a hand in its documentation. For example, the course directors and curriculum coordinators responsible for an area of the curriculum may be asked to provide all the curriculum map data points relative to their areas of

responsibility. The chief disadvantage of the decentralized approach is that there may not be consistency across the curriculum when different authors provide data. For example, different faculty members may write learning objectives with varying degrees of detail. If the curriculum data lives in a variety of places, such as presentation slides, syllabi, student schedules, and more, which version is the master copy? How can you ensure consistency across documents when curriculum map data is changed?

In a centralized approach, the collection (and to some degree, the writing) of curriculum data is in the hands of a few individuals, typically staff in the medical education or dean's office. The chief advantages of the centralized approach are control and consistency. The medical education office knows where the master set of data is, and any changes to the curriculum map are tightly controlled and overseen to ensure quality. For example, before a course objective can be changed, someone will need to determine whether the previous program objective relationships still fit, whether the previous event objective relationships still fit, whether the instructional and assessment methods still fit, and more. The chief disadvantage of the centralized approach is that it does not bring content experts and others who would benefit the curriculum map data into the development and oversight process.

There is more than one right way to oversee your curriculum map data, and different schools have opted for both centralized and decentralized approaches. To some degree, the approach you choose will depend on your school's organizational structure and staffing model. It may even be the case that a careful mix of the two approaches to overseeing your curriculum data can promote the advantages of both while mitigating their disadvantages.

Task 5: Determine what type of oversight model (whether centralized, decentralized, or a hybrid of both) you will employ to maintain your curriculum map data.

Chapter 6 key questions

1. Recall the list of motivations and goals we identified for our curriculum map in Chapter 1. Identify all our school's uses for curriculum map data.

Uses for curriculum map	How we will use curriculum map data for this purpose at our school
Program evaluation	
Course evaluation	
Accreditation support	
Continuous quality improvement	
Curriculum renewal	
Curriculum benchmarking	

Other	

2. List all our current curriculum oversight bodies, including their meeting cadence, and our curriculum governance documents (e.g., course evaluation forms). Gathering this information here will help inform the following questions in this chapter.

3. Stakeholder group	How is this group going to use our curriculum map data? What kinds of curriculum map data? How often?	What internal procedures or oversight bodies can we incorporate?	What is this group's role in updating the curriculum map data regularly?
Example: Curriculum committee	Example: Our curriculum committee evaluates program objectives once per year. This includes program objective language, coverage of program objectives by domain, distribution of program objectives coverage across phases and courses, links of program objectives to PCRS, etc.	Example: We will edit our curriculum committee policies and procedures to specify that review of program objectives in our curriculum map data is part of the committee's charge. Administrative staff will be responsible for gathering and sharing the data prior to the meeting.	Example: Changes to the program objectives can only be made with the curriculum committee's approval. The curriculum dean maintains the program objectives in our curriculum map.
Curriculum leaders			
Administrative staff			
Curriculum oversight bodies			
Course directors and curriculum planners			
Teaching faculty			
Students			
Applicants			

Internal stakeholders			
Other			

4. Now that you have completed the table above, are there any additional curriculum procedures or documents that need to be added or edited to include curriculum map data collection and/or review?

5. Going back to the list of curriculum map data points our school will collect, which we identified in Chapter 1, ensure that each data point has a point person responsible for maintaining it. An example of how this could look is provided here:

curriculum map data point	Faculty or staff person responsible
Course objectives	Course director is responsible for edits; curriculum coordinator is responsible for communicating updates to curriculum dean. Course objectives are finalized minimally 3 months prior to start of course. Course objectives, including updates, are reviewed in the monthly curriculum subcommittee meetings.
Event instructional methods	Medical education office's instructional designer is responsible for working with course director and teaching faculty; curriculum coordinator is responsible for communicating updates to curriculum manager. Event instructional methods are finalized minimally 1 month prior to start of course. Event instructional methods are reviewed in the weekly dean's office operational meetings.
Event keywords	Course director is responsible for tagging keywords to events within their course using the AAMC Keywords list; curriculum coordinator is responsible for communicating updates to curriculum manager. Event keywords are finalized minimally 1 week prior to start of course. Keyword reports are reviewed in the monthly curriculum committee meetings.

6. What ongoing resources, including faculty and staff, protected time, IT infrastructure, IT staff, software licensing, and more, are needed to maintain the curriculum map, given how we wish to update the use of the data?

7. Will we have a centralized, decentralized, or hybrid approach to managing our curriculum map data? Please describe in detail.

Chapter 7: Documenting time

Chapter 7 highlights

- Documenting scheduled and unscheduled content
- Study time and other pre-/post-activity work
- Clinical learning
- Other unscheduled curriculum content
- Beginning details for events

In this chapter, we will be highlighting some instructional methods that touch on documenting scheduled and unscheduled curriculum content. A complete list of instructional methods is available in Appendix I. We will explore instructional methods further in later chapters. Please also recall the discussion of time, in terms of duration (e.g., days) for course/modules described in Chapter 2 of this Guidebook.

Documenting scheduled and unscheduled content
The AAMC curriculum map's content is primarily sourced from data typically found in a CMS or LMS, which often includes student calendaring and scheduling features. The details from the calendar feed into the curriculum map, bringing details about learning events such as the amount of time spent, the instructional methods, the learning objectives, and more. curriculum map data can also come from a system that does not include student calendaring features, but in either case, a large amount of curriculum map data is tied to events, whether for learning, assessment, or both. For events that have a date and time, including them in the map is straightforward—scheduled lectures, workshops, simulations, etc. have a date, start time, and end time.

However, there may be curriculum content that is not so neatly scheduled. We want to acknowledge that documenting unscheduled content in your curriculum map is challenging. It will be important for your school to decide on a consistent approach to capture not only the scheduled but also the unscheduled curriculum content. Below are a few scenarios to consider.

Task 1: Identify which portions of your curriculum are unscheduled and not visible on a student calendar and thus may need a special approach to be included in your curriculum map.

Study time and other pre-/post-activity work
One common example of protected study time is that occurring prior to high-stakes assessments, including concentrated time to prepare for licensing exams. Time like this may be more straightforward to include in your curriculum map if it has set dates and durations.

Another example is the studying during off-hours that students are often responsible for. This may be studying assigned to the students as part of the curriculum. For example, some instructional methods necessitate that students study on their own to prepare for an upcoming teaching event or assignment. Perhaps the students are participating in a problem-based learning activity and need to do some research to prepare for a patient case discussion. Or perhaps the school is implementing a

flipped classroom model in its instruction and has assigned some prework as independent learning before the classroom session.

Are these types of activities required or optional? Are they scheduled on the student calendar? If so, how do you consistently determine how much time to assign? Is it based on the average amount of time students needs to complete the independent learning assignment or some other threshold? If these types of activities are not calendared, why not? If the answer to this question is "Because there is no room on the calendar," it may prompt your school to consider whether the amount of required content planned for the students, including scheduled and unscheduled curriculum activities, is feasible.

The advantages to calendaring curriculum activities like those described above is that (1) they will be easier to pull into your curriculum map, thus giving you a more complete picture of your curriculum, and (2) the amount of students' required curriculum activities will be visible and thus easier to manage.

Task 2: Determine your school's approach to documenting study time in your curriculum map.

Clinical learning

Some clinical learning activities are scheduled and may be more straightforward to bring into your curriculum map. For example, perhaps students are scheduled for regular preceptorship opportunities.

However, many clinical learning experiences are unscheduled. For example, in an obstetrics and gynecology (OBGYN) clerkship, there may be a series of learning objectives and clinical cases that students complete during a 6-week rotation. Students within the cohort might have different schedules and different learning experiences on any given day. Ultimately, though, each student will meet the clerkship requirements by the end of the rotation.

There is more than one right way to represent this curriculum in your curriculum map; school examples in the Building Better Curriculum webinar series may be useful to see various approaches schools take in documenting time. One approach is to group clinical learning time according to how many total hours students have spent in clinical time during a given week (e.g., 60 hours), so that the clinical time in the clerkship overall approximates the average student experience.

Solving this issue is an opportunity to bring content experts (in this example, clerkship directors) into the curriculum mapping process so that they can advise on the appropriate amounts of time spent in unscheduled clinical learning. Whatever approach you follow, it is important to choose a system you can implement consistently across clinical content and courses so that clinical learning is represented accurately in your curriculum map.

Task 3: Determine your school's approach to documenting clinical unscheduled time in your curriculum map.

Other unscheduled curriculum content

Beyond pre- and post-activity study and clinical learning, there may be other scenarios for unscheduled curriculum activity. For example, perhaps students are assigned a term paper that they work on throughout a months-long course. How will this be represented in your curriculum map? Perhaps you will enter this kind of assignment in your curriculum map with the assignment due date or the date it was assigned, as well as the approximate number of hours required to complete it. Or you could estimate a certain number of hours per week that students will spend on the paper. What other kinds of unscheduled curriculum activities need to be included in your map? One of the choices in the curriculum map Standardized Vocabulary list of instructional methods (see Appendix I) is *Independent Study,* which can be useful for documenting protected study time. It will be helpful to have a consistent approach for documenting unscheduled activities across your curriculum and courses.

Task 4: Identify any remaining areas of your curriculum that are unscheduled and determine your school's approach to documenting these in your curriculum map.

Beginning details for events

Now that you have an understanding of the many kinds of unscheduled activities that you need to consider ahead of time, you can make a list of the events and unscheduled activities to include in your curriculum map. You can refer to the list of courses, modules, and threads/themes you created in Chapter 4. For each of these, your list of events and unscheduled curriculum activities will need to include:

- Title,
- Date,
- Start and end times,
- Duration (hours, minutes), and
- The course, module, thread, or theme to which the event should be linked. (In the MedBiquitous standards, these organizational buckets are referred to as *sequence blocks.*)

Task 5: Document the title, date, start and end times, duration, and course/module link for each event you are including in your curriculum map.

The goal of the curriculum map,, is to represent the curriculum for a typical, hypothetical student. It may be that a single event is listed in your curriculum map more than once if it is experienced more than once by a given student. For example, perhaps there is an event concerning family discussions in the pediatric ICU that students attend once while on the pediatrics clerkship and a second time, intentionally, while on the OBGYN clerkship. Perhaps the students' learning objectives are tailored to shift focus between child and parent, depending on which clerkship they are currently attending. In this hypothetical scenario, the same event title could be in your curriculum map twice because an individual hypothetical student experiences that event more than once, each time with a distinct purpose.

Task 6: Confirm that any events listed more than once in your curriculum map are unique and meant

to be experienced more than once by the typical, hypothetical student. Remove any accidental duplicates.

Further details regarding events are discussed in later chapters of this workbook. So, finalizing the list of both scheduled and unscheduled learning to include in your curriculum map now will set you up for success in the upcoming work.

Chapter 7 key questions

1. What unscheduled learning occurs in our curriculum, such as clinical or independent study time? What approach will our school use to document our unscheduled curriculum content? How will we ensure our approach is applied consistently across courses and content?

2. List the scheduled and unscheduled events and curriculum content to include in our curriculum map for each course/module we identified in Chapter 4, along with:

    - Title,
    - Date,
    - Start and end times,
    - Duration (hours, minutes), and
    - The course, module, thread, or theme to which the event should be linked.

3. Are there any accidental duplicate events in our curriculum map list? Are all events listed more than once in our curriculum map truly experienced more than once by a typical, hypothetical student?

Chapter 8: Event learning objectives

Chapter 8 highlights

- Event-level data populates curriculum map reports
- Oversight, quality, and consistency of learning objectives

Events and the details they include are the most numerous aspects of your curriculum map. If you were to arrange your curriculum map data into a shape, it would generally look like a pyramid, with program-level data at the uppermost level, courses and modules (the organizing approach) in the middle, and events making up the bottom and largest level. In Chapter 7, you listed the events and unscheduled curriculum content to include in your curriculum map, including the following information for an event:

- Title,
- Date,
- Start and end times,
- Duration (hours, minutes), and
- The course, module, thread, or theme to which the event should be linked.

Event-level data populates curriculum map reports
The events in your curriculum map are where most of the details that will populate curriculum reports can be found, so specificity and detail in your event-level learning objectives will be critical. For example, if someone were to ask where your disabilities-related content lives, it is unlikely you would have it all tucked neatly into one, and only one, course. More likely, there would be content related to disabilities in various locations across the curriculum (e.g., physical disabilities, developmental disabilities, misconceptions about disabilities, conversations with patients about disabilities, diagnosis of disabilities, community and support organizations for patients with disabilities, physical exam skills applied to patients with disabilities, etc.). To do a comprehensive search of all disabilities-related curriculum content, most of the detail needed to create such a report would be found at the event level, perhaps most especially in the learning objectives. The more thorough and accurate your event-level learning objectives are written, the more accurate data reports will be. A good resource for effective language in learning objectives is the virtual Curriculum Community library collection on "learning objectives".

Oversight, quality, and consistency of learning objectives
Before you embark on collecting and writing event-level learning objectives, now is a good time to refer back to your school's consistent documentation practices identified in Chapter 2 to help address acronyms, misspellings, and other data quality issues. It may be useful to consult the curriculum map Keywords List (see Appendix II) when selecting terms, as each term in the keyword list has accompanying synonyms, included, and related terms documented as well. You can also refer to the learning objective approaches you used for your program objectives in Chapter 3 and your course-level learning objectives in Chapter 5.

Task 1: Refer to your school's consistent documentation practices that you identified in Chapter 2, the learning objective writing approach for your program-level learning objectives from Chapter 3, and the course- or module-level learning objectives from Chapter 5.

Recall the details in Chapter 5 about course-level learning objectives. The same writing principles will apply at the event level as you gather (or write) learning objectives for each event in your curriculum map. While collecting learning objectives for each event, you can ask:

- Are these event-level learning objectives written in descriptive, specific, outcomes-based language?
- Do these event-level learning objectives accurately and adequately capture the content?
- Do these event-level learning objectives reflect relevant and up-to-date literature?
- Have your content experts in the relevant fields reviewed these event-level learning objectives? Who needs to be included in your event-level learning objectives' writing and editing process?
- Can each of these event-level learning objectives be linked up to a course/module-level learning objective for the course/module in which this event occurs? (This will help identify gaps. Be sure to set thresholds as discussed in Chapter 5, so that faculty take a consistent approach and learning objectives are not over-tagged to each other, thus bloating your curriculum reports.)
- Are these event-level learning objectives meeting your school's goals (e.g., preparing students for licensing exams, etc.)?
- Are these event-level learning objectives the right degree of difficulty, do they build upon previous curriculum content as well as prepare students for future curriculum content in this area, and do any of them duplicate content students have already received? (These are all questions about your learning objective alignment.)
- Now that you have event-level learning objectives documented, does the duration of time assigned to this event (in Chapter 7) still make sense? For example, if, on the calendar, students are attending a 1-hour lecture but there are 80 event-level learning objectives listed for this lecture, something needs to be adjusted. There are no hard and fast rules for how many learning objectives are too many, so discussion among your curriculum leaders can help identify some school-specific guidelines. Perhaps, for a 1-hour lecture, your school may decide that given the amount of detail you expect in your event-level learning objectives, no fewer than five but no more than 15 is reasonable.

Task 2: Gather existing event-level learning objectives for each event within your curriculum map, and vet them against the questions listed above.

Whatever approach you choose in your event-level learning objectives, it will be helpful to write out your school's guidelines and offer professional development so that faculty take a consistent approach across courses when editing their learning objectives. For example, when students are learning to perform a physical exam, will you have a learning objective on every single maneuver, or will the maneuvers be listed in your assessment rubric while the learning objectives are written more broadly (e.g., the abdominal exam)? The approach you take in one area (e.g., X content goes in the learning objectives, Y content goes in the assessment rubrics) could be applied across courses. You also may want a centralized process to review quality and consistency of learning objectives. This will be especially important if you have multiple authors contributing to them.

Task 3: Determine your school's approach regarding level of detail and formatting for event-level learning objectives as well as how to vet drafted learning objectives for quality.

If you find any gaps or need to make edits to your learning objectives, be sure to complete that step now, before moving on to Chapter 9, as there you will be using your event-level learning objectives to document instructional and assessment methods and resources. This is also the time to choose whether you will assign ID codes to each event-level learning objective; recall the details in Chapters 3 and 5 regarding creating a meaningful ID code system for learning objectives.

Task 4: Write and/or edit event-level learning objectives to ensure quality, accuracy, and completeness and to address any curricular gaps identified. Complete links between event-level learning objectives and course-level learning objectives and assign ID codes as desired.

Chapter 8 key questions

1. Gather our list of events and unscheduled curriculum activities to include in our curriculum map from Chapter 7. Do we need to make any edits to this list before we proceed?

2. Gather our consistent documentation practices that we identified in Chapter 2. Do we need to make any edits to these before we proceed?

3. Knowing how our event-level learning objectives will be visible in reports, is there anything we want to adjust about our current event-level learning objective documentation practices before we proceed?

4. Recall the course/module-level learning objective principles we identified in Chapter 5. Are there any further principles or resources we need to identify before we proceed? What will be our centralized process for ensuring quality and consistency across faculty and courses? Can we offer resources and/or professional development about writing learning objectives to our faculty?

5. For each event, the following questions can help in writing or vetting our event-level learning objectives:

    - Are these event-level learning objectives written in descriptive, specific, outcomes-based language?
    - Do these event-level learning objectives accurately and adequately capture the content?
    - Do these event-level learning objectives reflect relevant and up-to-date literature?
    - Have our content experts in the relevant fields reviewed these event-level learning objectives? Who needs to be included in our event-level learning objectives' writing and editing process?
    - Can each of these event-level learning objectives be linked up to a course/module-level learning objective for the course/module in which this event occurs?
    - Are these event-level learning objectives meeting our school's goals (e.g., preparing students for licensing exams, etc.)?

- Are these event-level learning objectives the right degree of difficulty, do they build upon previous curriculum content as well as prepare students for future curriculum content in this area, and do any of them duplicate content students have already received?
- Now that we have event-level learning objectives documented, does the duration of time we assigned to this event (in Chapter 7) still make sense?

6. Have we addressed all the identified gaps, and are there any further event-level learning objective edits needed before we proceed?

7. Will we assign ID codes to each event-level learning objective, and if so, what will our system be?

8. What will our process to update our event-level learning objectives from year to year be? Make sure we have identified this area of our curriculum map in our Chapter 6 maintenance plans.

Chapter 9: Instructional methods, assessment methods, and resources

Chapter 9 highlights

- Alignment among learning objective, instructional method, assessment method, and resource
- Standardized vocabulary
- Technical rules
- School-specific guidelines

Alignment among learning objective, instructional method, assessment method, and resource
Now that you have your list of events and unscheduled content from Chapter 7 and have written and/or collected event-level learning objectives for each in Chapter 8, it is time to assign instructional methods, assessment methods, and resources to each event as applicable.

The learning objective language, especially the verb choice, will drive the selection of instructional and assessment methods, which in turn will drive the choice of resources. As an example, if your event-level learning objective begins with the verb *discuss,* your teaching and assessment approach will likely need to include some opportunity for communication, whether through verbal discussion or writing. If your event-level learning objective begins with the verb *demonstrate,* your teaching and assessment approach will likely need to include some opportunity for performance. The learning objective, instructional method, and assessment method should work in harmony together. Once you have identified the instructional and assessment methods you would like, you can select which resources you will need to support them.

Task 1: Review how the language of a learning objective, especially the verb choice, directs the selection of instructional and assessment methods and, in turn, resources.

Standardized vocabulary
A list of all possible choices for instructional methods, assessment methods, and resources is available in the curriculum map Standardized Vocabulary document in Appendix I. This common set of instructional methods, assessment methods, and resource types enables aggregate curricular reporting; .

There are some instructional and assessment methods that fit together more directly. For example, instructional method IM012: Laboratory is a natural fit with assessment method AM019: Exam–Institutionally Developed, Laboratory, Practical, although this is not the only assessment method you could pair with a laboratory teaching experience. If you choose IM012: Laboratory for your instructional method and AM019: Exam–Institutionally Developed, Laboratory, Practical for your assessment method, perhaps the resource to pick to support these would be RE004: Cadaver.

Within the curriculum map Standardized Vocabulary document, each term (e.g., *concept mapping*) comes with an ID code (e.g., IM004) that must be used along with it in your curriculum map submission. Each term also comes with a definition, references, synonyms, and clarification of related terms that are not included in the definition. For a successful data upload, your curriculum map

submission can include only the terms found within this document regarding instructional methods, assessment methods, and resources.

Task 2: Review the curriculum map Standardized Vocabulary list for instructional methods, assessment methods, and resources.

From a curriculum design perspective, recent trends in medical education have included the increasing integration of curriculum topics (e.g., clinical and basic science content) and the use of active learning approaches. As these trends continue, you may find that multiple instructional approaches occur within a single event.

Task 3: Review use of instructional and assessment methods and resources.

School-specific guidelines

Establishing your school's guidelines will be helpful in assigning instructional and assessment methods and resources so that tagging across courses can be consistent. It will be especially important if there are multiple faculty and staff providing these tags. For example, perhaps your curriculum has a series of 2-hour events across several courses that use a team-based learning (TBL) model (IM026), but the content of the TBL focuses on patient cases. Does this situation qualify also as case-based instruction/learning (CBL, IM001), such that all of these 2-hour events should be tagged with both IM026 and IM001? Possibly so, but it will be important to have a centralized process to make these kinds of decisions and communicate them to your faculty and staff so that tagging practices are consistent. This centralized process could include professional development for your faculty and staff. Your technical platform may allow you to allot the amount of time spent per instructional method which can be useful for internal curriculum management purposes.

Another example where school-specific guidelines and approach to documentation are important relates to instruction and assessment that, for any given student, occur on different days. Recall our consideration of unscheduled events from Chapter 7. With licensing exams, for instance, each student ideally takes the exam once, and so, the typical, hypothetical student represented in your curriculum map should have the licensing exam (e.g., AM006: Exam–Licensure, Clinical Performance or AM007: Exam–Licensure, Written/Computer-based) listed once in your curriculum map. However, in reality, each student takes the licensing exam on a different day. How will you represent this event and assessment method in your curriculum map? The first day the licensing exam is offered? The last day students can take it? Establishing your school's approach to documenting these assessments will help ensure consistency across your curriculum.

Task 4: Determine your school-specific guidelines for assigning instructional methods, assessment methods, and resources to each event, and tag the events in your curriculum map accordingly.

Chapter 9 key questions

1. Do we have our list of events and unscheduled content, along with learning objectives, from our work during Chapter 8? Have we reviewed the curriculum map Standardized Vocabulary (see

Appendix I) with all the possible choices for instructional method, assessment method, and resources?

2. What instructional and assessment methods will best align with the learning objectives for each event? What resources are needed per event to support our instructional and assessment methods?

3. What are our school-specific guidelines for dealing with cases where multiple methods (e.g., TBL and CBL) may apply or where students may experience a given event and method (e.g., licensing exam) on different days?

4. What resources or professional development will we provide to our faculty and staff to ensure consistent assignment of instructional and assessment methods and resources across content?

How will we ensure the accuracy of our instructional and assessment methods and resources from year to year? (Be sure this element of our curriculum map was included in our maintenance plans from Chapter 6.)

Chapter 10: Keywords

Chapter 10 highlights

- Reasons and goals for tagging keywords
- Your school's implementation plan
- Standardized keyword list

Using keywords to tag content within your curriculum map can help you search your curriculum through queries and produce reports so that you can more easily use your curriculum map data. Your technical platform may have additional methods by which you can tag and search your curriculum map, but the use of keywords is one approach that is both within the curriculum map standards. Use of the AAMC Keywords are recommended although not required – a school could choose to use the AAMC Keywords and supplement with their own keywords as needed. These are available in Appendix II.

Reasons and goals for tagging keywords
There are multiple ways you can utilize the results from a search using keywords—for instance, your curriculum committee may wish to analyze the amount and location of content in the curriculum for various content areas. Thinking about the purpose of your keywords and how you want to use their search results can drive your choices of keywords and how you apply them. Perhaps you wish to generate reports for your curriculum committee, prepare for an accreditation site visit, inform students where content relevant to a licensing exam is in your curriculum, etc.

Some schools use a very detailed approach, such that there are thousands of terms in their customized keyword list, or rely on a standardized list, e.g., the Medical Subject Headings of the United States National Library of Medicine. Other schools take a very high-level approach, with fewer terms in their keyword list. Still other schools may do both, having a very high-level but also very detailed hierarchical keyword list. The approach you choose should align with your goals for how you plan to use your keyword list results.

It is important to prioritize what you and your faculty and staff will have time to maintain. Every element you tag in your curriculum map in detail creates a field that must be regularly monitored and updated. It may be that a keyword list of thousands of terms is your first choice, but a shorter keyword list is more feasible given your school's resources and ability to maintain your curriculum map data from year to year.

Task 1: Determine your school's goals for use of keyword-tagged curriculum map data and consider what resources your school has to maintain that data from year to year.

Your school's implementation plan
Who is going to do your keyword tagging? With some aspects of your curriculum map, you may be able to delegate the data collection to your staff. For example, curriculum coordinators may be the most knowledgeable about student classroom time. With keywords, however, a certain amount of

content expertise is required, which may mean involving different faculty members per content area. At the same time, you will want to have a consistent approach so that your reports are reliable; recall Chapter 6's discussion of a centralized versus decentralized process for collecting and vetting your curriculum map data.

For instance, what counts as interpersonal and communication skills and therefore warrants a keyword tag in this area—is it if there is discussion during class, if the word *communication* is in the event title, if the learning objectives focus on the development of communication skills explicitly, etc.? If the faculty are very generous with what counts as interpersonal and communication skills content and thus over-tag with keywords, the resulting search queries and reports may be difficult to use.

Task 2: Determine who at your school will do the keyword tagging, how thresholds will be set to prevent over- or under-tagging, and how you will ensure consistency in approach across potentially multiple keyword taggers.

Standardized keyword list

The recommended approach is to use the AAMC CI Keywords. This high-level keyword list is relatively short (i.e., fewer than 100 terms) and provides instructions regarding how to set a threshold for what content warrants a keyword tag. The approach taken to creating the keyword list, as well as what it is and is not intended for, is further detailed in the keywords instructions.

It may be helpful to review the AAMC Keywords instructions together with your faculty to ensure consistency. Just as you would gather your faculty to confirm understanding before implementing an assessment rating scale, they can similarly be brought together to ensure common understanding of the keyword implementation.

The AAMC Keywords list is informed by the literature and considers several data sources. However, its use is optional; you can use additional or alternate terms as you desire. Your technical platform may allow you to tag keywords at various levels (program, course, event) of the curriculum,

Task 3: Review the AAMC Keywords and instructions.

If you choose to create your own keyword list or have each faculty member choose any keywords they would like, there may be some issues to resolve:

- What degree of detail do you want to drill down to for your keywords? Is a high-level list sufficient?
- What data sources will you use for your keywords?
- How will you define each of your keywords?
- At what level will you tag your keywords (e.g., event, course)?
- What thresholds will you set so that keywords are tagged consistently across content?
- How will you control for terms with the same meaning (e.g., *hypertension* vs. *high blood pressure*)?

- How will you control for capitalization, plurals, and spelling (e.g., *Knee, knees, kneees*)?
- How will you maintain your keyword list from year to year?

Task 4: Determine your keyword list (the recommended approach is to use the AAMC Keywords), and tag each event within your curriculum map.

Chapter 10 key questions

1. What are our school's goals for the use of our curriculum map data once we have tagged events with keywords? What kinds of reports do we want to be able to create and for what purpose?

2. Who will do our keyword tagging? How will we include our content experts but also have a centralized process to ensure the accuracy of our keyword tags?

3. Do we need to supplement the AAMC Keywords? If so, how will we choose those terms and execute them?

4. What kind of faculty and staff development can we provide to ensure our keyword tagging is consistent across content areas?

5. How will we maintain our keyword accuracy from year to year? Be sure this element of our curriculum map data is included in our maintenance plans identified in Chapter 6.

Iterative process

As we have mentioned throughout this guidebook, there is more than one right way to build a curriculum map. The process outlined in this workbook helps illuminate the major steps of the curriculum map-building process, although there are other approaches that can also be successful.

You may find, as you and your team progress through the chapters, that new information becomes available and prompts a return to earlier chapters to revise your work. It is a normal and natural part of the process to revise plans and content for your curriculum map to ensure its accuracy and completeness in an iterative fashion.

Additional assistance

We hope you have found this step-by-step guide helpful. If you have questions or suggestions about the *Guidebook to Building a* curriculum map or need assistance, please reach out to curriculum@aamc.org.

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Appendix I: Curriculum Inventory Standardized Instructional and Assessment Methods and Resource Types

Appendix II: AAMC Keywords List

Appendix III: Physician Competency Reference Set (PCRS)

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