Contextualized Curriculum
for Adult Learners in Math and Literacy

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Navigating the System

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How a community health care worker understands and synthesizes health information and available resources and presents that information to patients in order to help them overcome barriers to accessing healthcare.

Industry Sector: Healthcare
Content Area: Literacy
Core Topic: Integrating and presenting information

Expand All | Collapse All

Common Core State Standards

SL.11-12.4: Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

RST.11-12.7: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

W.11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.11-12.2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

Adult Basic Education Standards

Reading Standard 1: Learners will comprehend and analyze a variety of texts for various purposes.

R1.4a Distinguish between fact and opinion, fact and fiction, relevant and irrelevant information.
R1.4d Summarize ideas and information from texts of increasing length and complexity of content.

R1.4f Draw conclusions and make predictions and inferences from information or ideas presented in texts of various genres (e.g. historical documents, newspaper and magazine articles, fiction and non-fiction, job-related materials).

R1.5b Evaluate the persuasiveness of a text on the basis of the quality of evidence provided to support its argument.

Writing Standard 1: Learners will express themselves through writing for a variety of purposes.

W1.4a Write correctly punctuated and constructed paragraphs describing how to make, build or do something

Writing Standard 2: Learners will apply knowledge of English vocabulary, language structure, and mechanics when they write.

Writing Standard 3: Learners will use a variety of strategies to convey meaning through written English.

Industry Overview

Healthcare in America

From neonatal nurses to radiology technologists, medical coders to medical office assistants, health educators to home care aides, the healthcare industry provides a vast and diverse array of services to individuals at every stage of life. Providing nearly 17 million jobs and accounting for an estimated $18 million of the U.S. GDP in 2009, healthcare is the nation's largest industry. In Massachusetts, in particular, healthcare accounts for more than 15% of employment (compared with 12% nationally), accounting for approximately one in six jobs. With an aging baby boomer population that is living longer, there is greater demand for more and higher quality preventative and long-term healthcare across the United States. With eight of the 30 fastest growing occupations, healthcare is predicted to be one of the fastest growing industries both nationwide and in Massachusetts between now and 2020.

Careers in Healthcare

The healthcare industry includes a vast array of jobs related to planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. This industry includes five career pathways:

- therapeutic services, which includes professionals who work directly with patients to improve their health by providing direct care and treatment for patients (for example, a nurse or a physical therapist assistant);
- diagnostic services, which includes professionals who plan and conduct tests to detect and diagnose diseases and injuries, and use test results to plan treatment (for example, a radiologic technologist or a sonographer, who perform diagnostic imaging examinations, such as X-rays or ultrasounds);
- health informatics, which includes professionals who compile and manage health information and records (for example, a medical records and health information technician, who organizes and manages patient databases; higher-level positions, such as administrators of healthcare facilities or departments, are also included in this pathway);
- support services, which includes professionals who provide assistance to other medical professionals, allowing them to do their jobs in diagnosing and treating patients or supporting therapies (for example, food service workers and nutritionists ensure that patients' meals are healthy and meet dietary guidelines); and
- biotechnology research and development, which include careers that involve bioscience research; while many of these professions require doctoral or medical degrees, some entry-level opportunities in the field require only an associate degree (for example, food and agricultural science technicians).

Mathematics and Communication Skills Needed in Healthcare

The growing complexity of the healthcare industry, including changing technologies, requires workers to continuously upgrade their skills. In addition to technical skills specific to their job, mathematics and literacy skills are crucial for success in all occupations across the healthcare industry.

Communication: First and foremost, no matter the job, good healthcare practitioners are committed to giving patients the best care available and keeping abreast of health research and developments in the field. All workers need to be able to read medical journals and understand medical terminology and vocabulary, as well as read and write literate emails to co-workers/supervisors. Many healthcare jobs also require the ability to read and interpret charts and access and interpret electronic medical records in order to provide quality care.

Many health careers, especially—but not exclusively—those in therapeutic services—involve interacting with patients and their families, in some cases working with people who may be sick, disabled, or dying. Even support staff in a medical office or hospital require effective oral communication skills as well as compassionate interpersonal skills such as the ability to listen and talk to patients to assess needs. Effective communication with colleagues as well as patients is crucial. Healthcare is increasingly a group activity, in which a patient's recovery depends on how well all members of a healthcare team perform specific function, and how well they communicate and collaborate with one another.

Mathematics: From reading charts to interpreting data to measuring and administering correct medicine, basic mathematics skills are essential for providing quality care across most healthcare occupations. Nurses, for example, use mathematics for calculations in all areas of their duties. They use mathematics to calculate dosages, caloric requirements for individual patients, calibrate equipment, and interpret lab results. Charts and patient data are often presented as decimals or percentages, and a nurse must be able to convert between the two, thus requiring competency in understanding and using ratios, proportions and percentages.

Much of modern medicine is based on statistics, and all workers in the industry should have a basic understanding of how statistics are used to influence medical trends. Nurses, for example, need to be aware of the statistics behind prescribing medications and possible side effects or complications. They might use statistics to counsel patients on diagnoses or prognoses, or in gathering patient histories.

Career Opportunities in Healthcare with Education from Community Colleges

Massachusetts Community Colleges play a crucial role in preparing students for careers in health sciences across all sectors of the industry—therapeutic services, diagnostic services, informatics, and support services. All 15 community colleges offer pathways to nursing careers, the largest occupation in the healthcare industry. Additionally, Massachusetts Community Colleges offers associate degree and certificate programs that prepare students to enter occupations across all sectors of the industry, for example:

- *Therapeutic services:* registered nurse, practical nurse, nursing assistant, certified nurse's aide, massage therapist, fitness trainer and instructor, dental hygienist, dental assistant, [pharmacy technician](), physical therapist assistant, occupation therapy assistant, respiratory assistant, medical assistant
- *Diagnostic services:* radiologic technologist and technician, radiographer, surgical technologist, sonographer, phlebotomist, paramedic, polysomnographic technologist and technician, medical and clinical laboratory technician, magnetic resonance imaging technologist, nuclear medicine technologist, veterinary technologist
- *Informatics:* Medical record and health information technician, medical coder, medical interpreter, medical biller, medical transcriptionist, health educator

Recent Career Opportunities in Massachusetts

The following is a sample of healthcare job listings in Massachusetts that require an associate's degree or certificate:

- Registered Nurse (RN), AmeriCare At Home, Boston, MA [[show]()]
- Medical Technologist, Emerson Hospital, Concord, MA [[show]()]
- Ultrasound Technologist, Brockton, MA [[show]()]
- Licensed Practical Nurse, Hologic, East Watertown, MA [[show]()]

Employment Outlook for Healthcare

America's aging population is now nearing or entering retirement (opening new jobs), and will continue to require more services and the increased use of innovative medical technology for diagnosis and treatment. As a result, healthcare is one of the fastest growing industries both nationwide and in Massachusetts, where growth is even higher than nationally. For example, in 2010, Baystate Health of Springfield, which employs more than 10,000 across its Western Massachusetts system, said that it would likely need to hire about 15,000 people between 2010 and 2020 to replace retiring workers and meet increased demand.

One important factor in the healthcare industry is the financial pressure on hospitals to focus on efficiency and profitability, which results in discharging patients as soon as possible. These financial pressures, along with increased healthcare coverage under federal law, will likely result in a growth in out-patient services in the healthcare industry, such as rehabilitation clinics, long-term care facilities, and home care programs. As a result, occupations experiencing the largest growth include home care aides, physical and occupation therapist assistants, dental hygienists, and medical assistants.

Emerging careers in Health/Information Technology (HIT): Estimates based on data from the Bureau of Labor Statistics (BLS), Department of Education, and independent studies indicate a shortfall of approximately 51,000 qualified Health IT (HIT) workers who will be required over the next five years to meet the needs of hospitals and physicians as they move to adopting an electronic healthcare system, facilitated by the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009. The HITECH Act is a key component of healthcare reform. The Act encompasses interoperable electronic health records (EHRs) including computerized systems to order tests and medications, and support systems to aid clinical decision making and the development of a national health information network to permit the secure exchange of electronic health information among providers. The Congressional Budget Office estimates that the incentive mechanisms in the HITECH Act will increase HIT adoption rates from 45 percent to about 70 percent for hospitals and from 65 percent to approximately 90 percent for physicians. To support job growth in this emerging career field and ensure the adoption of EHRs, new types of workers are needed to facilitate information exchange across healthcare providers and public health authorities, and assist in redesigning workflows within healthcare settings to maximize the quality and efficiency benefits of EHRs, while maintaining privacy and security of health information and records. To that end, the Department of Health and Human Services has embarked on an initiative to build the HIT workforce with community colleges as the primary training ground for these new workers: (1) Practice workflow and information management redesign specialists; (2) Clinician/practitioner consultants; (3) Implementation support specialists; (4) Implementation managers; (5) Technical/software support staff; and (6) Trainers. The average hourly earnings for community college program graduates are expected to be in the target range of between $12.46/hour to $20.25/hour.

Resources:

Healthcare Employment Outlook:

- Massachusetts Career Information System: Massachusetts-specific information on careers which can be used to look at different industries, occupations within those industries, and the skills and education needed to work in these jobs
- WorkKeys Occupational Profiles
- Bureau of Labor Statistics

Healthcare Career Information:

- Top 5 Reasons to Work in the Healthcare Field, About.com
- Break Into a Healthcare Career, About.com
- Healthcare Initiatives, US Department of Labor
- Six Healthcare Careers that are Booming, Yahoo! Education
- Career Clusters in Health Sciences, National Association of State Directors of Career Technical Education Consortium
- Explore Health Careers, American Dental Education Association

Massachusetts Healthcare Job Listings:

- Massachusetts Healthcare Jobs, Jobs.net

Workplace Scenario (8th Grade Level)

This scenario is based on the work of a community health care worker. For more information, review [this webpage](#).

You are a community health care worker. You work at a [community health center](#) in an urban neighborhood. As a community health care worker you help community members learn how to find the health care that best meets their needs. You do this by helping patients understand how the healthcare system works and helping them connect to doctors and other health care workers. This is called being a [liaison](#). You were raised and live in the community. You use your knowledge of the community to help improve the quality of healthcare services provided by the center. You help workers at the center learn how to talk with patients who come from many different cultures. This helps to improve the [cultural competence](#) of the services provided. You talk to the managers at the center about what you think would make services better for the patients. In your work with patients, you focus on many things. You want to understand the obstacles they face in finding medical help and help them overcome those obstacles. You also want to help them find the best ways to get and stay healthy. You meet with patients and their families. In the meetings you learn what they need help with. Sometimes they need help on how to pay for a doctor or how to find a bus to get to the doctor.

Many of your patients need help understanding health information. You often go to the drug store to pick up medicine for your patients. It is medicine that has been prescribed by a doctor. You pick up these [prescriptions](#) and carefully read the information on the label. The label says how much medicine the patient should take and how often to take it. It may also include special directions. These directions might say to take the medicine on an empty stomach. You explain the directions to your patients. Sometimes you schedule doctor's appointments for patients. You can also arrange for transportation to the doctor's. You also make sure your patients have or can find health care [insurance](#). In addition, you help them in finding other services. This might include help if they are not working or special care if they have a drug or alcohol problem.

Your job is to help patient's feel more comfortable dealing with doctors and other health care providers. Your job is to help them be able to do these things on their own. In your job, you need to read and understand a lot of information. You have to understand directions for medicines, how to sign-up for a health care program, and how to find [insurance](#). You then explain this information to your patients and their families. In addition, many of your patients have to keep notes on their health needs. They have to then share these notes with their health care providers. You help these patients to learn how to make these notes using a notebook. These notebooks are sometimes called logs. For example, you work with patients with diabetes. Patients with diabetes must keep track of their blood sugar levels. You often help these patients understand how to record their blood sugar levels in their logs. Patients often need help keeping all of their health information in one place. You help by putting together folders of information for each patient. These folders might include many different things. A folder might include lists of a patient's medications, notes about what each medication is for, and how each should be taken. The folder might also include a place for patients to record how they are feeling. For example, a patient might need to record how many headaches they have or if they have pain. In the folder, you also include the names and phone numbers for their different doctors and other [insurance](#) information.

Workplace Scenario (High School Level)

This scenario is based on the work of a community health care worker. For more information, review [this webpage](#).

You are a community health care worker at a [community health center](#) in an urban neighborhood. In this role, you serve as a [liaison](#) between community members and the healthcare system. You help patients navigate this complex system. You were raised in and live in the community. You can use your knowledge of the community to help improve the quality and [cultural competence](#) of the healthcare services provided by the center. You provide insights and feedback to the center's

management. Your work with patients focuses on understanding the barriers they face in seeking medical assistance and promoting their health. You also help them to overcome those barriers.

You manage patient cases. You start by meeting with the patient and their family to determine what issues they need assistance with. This might include finances or insurance, counseling, language translation, or transportation. Many of your patients need assistance in making sense of medical information. You often pick up filled prescriptions. You read the prescription label to determine how much medication the patient should take and the schedule. You also note any directions about how to take the medication (such as on empty stomach). You then explain this information to patients and stress the importance of following the directions. For some patients, you schedule appointments and make sure that they keep all of their appointments. You remind them of upcoming appointments and provide or coordinate transportation. You also help ensure that your patients have or can access healthcare insurance. Additionally, you assist them in finding other services. For example, some patients need help with unemployment or welfare, rehabilitation for addictions, or adult day programs.

Your goal is to ease patients' anxiety about dealing with the healthcare system and increase their self-sufficiency. Your job requires you to synthesize a lot of information. For example, you need to read prescription labels, requirements for admittance into rehabilitation or care programs and insurance information. You then need to be able to present it to your patients and their families in ways that are clear and accessible to them. In addition, many of your patients have chronic conditions. These need to be tracked and reported on to medical personnel. You help patients understand how to record this information using logs. For example, you work with a large number of insulin-dependent diabetics. This includes all patients with Type 1 diabetes and some with Type 2 diabetes. You help these patients understand how to record their blood sugar levels in their logs. To help patients keep track of all of their health information, you often develop packets of information for them. These packets might include tables listing their various medications, what each medication is for, and how each should be taken. The packets also might have tables for patients to record blood glucose and blood pressure levels. They may note how they are feeling (for example, pain they are experiencing, whether they experience any dizziness or headaches). You include information on which medications they take and when. In addition, you record contact information for their various doctors. You also list the billing and healthcare insurance departments, appropriate counselors, and other resources.

Core instructional context

Integrating and presenting information from different formats and in different formats requires students to use critical thinking skills along with presentation skills. Integrating and presenting information in new or different formats require students to engage in higher order thinking as the identified by the updated version of Bloom's Digital Taxonomy.

In order to integrate and create a new format of information, students will need to gather the additional information they need about the topic, understand how it fits together, and then create a different and more accessible version of the information.

Show the video "Using Information" from Career One Stop. Ask students where they gather information they need and discuss the sources of information they currently use. Tell them that in this activity they will engage in gathering information, understanding what the new information means, and then provide it in a new format for someone else.

Steps students might take to integrate and present information could include:

1. Developing background knowledge about the topic.

For example, the scenario in this module mentions patients who are insulin-dependent diabetics. As a pre-writing activity, students may need to gather information about patients who are diabetics and dependent on insulin. To begin, you might use a KWL chart to help students identify what they already know and what they want to learn. As a follow up after their research, they can list what they have learned.

Topic: Insulin-dependent diabetics		
What I KNOW	What I WANT to know	What I have LEARNED

	Source #1 note	Source #2 note	Source #3 note	Source #4 note
Main Idea A				
Main Idea B				
Main Idea C				

To answer their questions about what they want to learn, students might use a matrix similar to this one to gather information from a variety of print of online resources.

2. Evaluating sources of information they find, whether in print or online.

As students search for information either in print or online, they need to evaluate their sources of information to be sure that the content is accurate and written by an authority in the field (a knowledgeable person or organization). They should also evaluate that it is objective, unbiased, current and verifiable. For more information on critically evaluating sources of information, see Critical Evaluation of Information Sources or Evaluating Web Sites: Criteria and Tools. For help on conducting Internet searches, you might direct students to Conducting Effective Online Research

3. Using critical thinking to analyze and synthesize information.

After they have gathered information and evaluated all their sources, students will review each piece of information or data they've gathered in light of their goal, i.e. to understand what insulin-dependent diabetes means for patients. They will use critical thinking to compare and contrast the information in relationship to what they already know, to notice emerging themes or patterns, and to notice any gaps in the information they have. Synthesizing information requires students to process and interact with information rather than simply copying and pasting. Students who are actively engaged with information are able to categorize, analyze, combine, extract details, re-assess the value of the collected information, and look for bias or omissions. Finally, they can relate new understanding to their own knowledge and experiences and develop new meaning or representation of the information.

4. Creating a new representation of the information.

Finally, students create a representation of their new integrated knowledge which will include their own understanding of the new information they've gathered, integrated from a variety of sources, and combined with their previous background knowledge. The new representation might take the form of a report, a PowerPoint presentation, or a chart or graph.

5. Reflecting and self-assessing..

As a final step, students might reflect on what they've learned not only about the topic but also the process they've gone through to complete the activity. They should use the class presentation rubric to assess their work.

Example Activity

Assign small groups of two or three students to research information about the role of a community health care worker and to develop a PowerPoint presentation about what they've learned. In their groups, students should develop a list of questions they will need to answer about the role of community health care workers and conduct research. Remind students that they can use a jigsaw

strategy to share the research task and then to integrate all the information they've found. Sources of information that might be useful to help them get them started include:

- Community Health Worker, ExploreHealthCareers.org
- Community Health Care Program, New York State Department of Health
- Community Health Workers, National Conference of State Legislatures

After groups complete their research and have synthesized the information, they will then create a PowerPoint presentation (including notes for each slide) to share with the class.

Assessment

Use the class presentation rubric or adapt one of the ones below for self- or peer assessment or to assign a grade:

- Grading Rubric for a PowerPoint Project, Sacramento State College of Education
- Career/College PowerPoint Presentation Rubric, RCampus

Contextualized learning activities

1. Scaffolding the reading.

If you plan to use the contextual reading about the community health care worker with your students, you may want to use strategies to scaffold the reading (if your students need this type of reading assistance) and guide them to discuss the importance integrating and presenting information in this role.

Strategies for scaffolding the reading include:

- Motivating students by activating prior knowledge using a KWL chart (Know, Want to know, Learned).
- Identifying and teaching key vocabulary prior to reading or during reading.
- Reading the scenario aloud to students.
- Using graphic organizers after reading to outline text and to illustrate principles within a text, such as a storyboard, story map, character web, time line, Venn diagram or ranking ladder (Many of these graphic organizers are available at the Holt Interactive Graphic Organizers website).
- Using partner read-alouds.
- Using thinking notes while reading (View the Teaching Channel's video on Thinking Notes).

2. What is the question?

Assign small groups of students to read, analyze, and discuss the article What the Health Care Ruling Means to You or another controversial topic. The goal of the activity is to generate questions that are raised by reading and discussing the article. They should identify what else they need to know and how they propose to find out additional information. At the end of the activity, students can share their questions to build a whole class bank of questions that might be used for a follow up research activity.

3. Presenting information in a new format.

Tell students that they are working with a patient with limited English language skills who has a deep cut on her arm. The wound has been stitched and the patient is now at home. Read the Wound Discharge Instructions provided by the nurse and plan the instructions you need to provide the patient. Prepare a flow chart to provide the information in a more visual format since the patient you are working with has limited understanding of English. This resource can help students prepare a flow chart: Draw flowcharts with Word and PowerPoint.

4. Using one of the pages of data at the Kaiser Family Foundation, direct students to analyze the data and rewrite the information in one or more paragraphs.

5. Students will view the [How to Read a Prescription Label presentation](#) and then identify the parts of a prescription label for a patient for this medication:

CENTRAL PHARMACY
45 Main St, Anytown, US 12345   (800) 555-5555

Dr. J Thomas, MD

RX # 672874-9032   9/15/2012

Douglas, Mary

Take one tablet by mouth twice daily for 10 days.

Augmentin 500 mg capsules

Qty 20   Use by 9/15/2015
No Refills

6. Students will read information about the drug [Augmentin](#) and prepare a list of side effects for the patient to watch for and steps to take if she notices any side effects.

Contextualized test items

Students will analyze the data in the chart [Health Insurance Coverage of the Total Population, 2009-2010](#). After carefully reviewing the information, students will provide the same information by writing a paragraph.

Contextualized project

Assign small groups of two or three students to research information about careers in the medical field and to develop a PowerPoint presentation about what they've learned. In their groups, students will review a list of careers in the medical field and select at least two to write about. The [videos at Career One Stop](#) will be a helpful source of information to get them started. Remind students that they can use a jigsaw strategy to share the research work and then to integrate all the information they've found. Other than the Career One Stop videos, students should plan to conduct research on the careers they've selected either on the Internet or in the library for print sources.

After groups complete their research and have synthesized the information, they will then create a PowerPoint presentation (including notes for each slide) to share with the class about the careers they've researched.

Assessment

Use the class presentation rubric or adapt one of the rubrics below for self- or peer assessment or to assign a grade:

- [Grading Rubric for a PowerPoint Project](#), Sacramento State College of Education
- [Career/College PowerPoint Presentation Rubric,](#) RCampus

Additional or extension activities, multimedia, readings and/or resources

[Information Alchemy: Transforming Data and Information into Knowledge and Wisdom](#), The Big 6

PBWorks, A free online collaboration tool

Health Career Guide, Vocational Information Center

Instructor Adapted Classroom Materials

Navigating the System ESL Lesson Plan, Quinsigamond Community College, ESL

Navigating the System ESL Lesson Plan, Holyoke Community College, ESL

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