

## **CERTIFIED QUALITY IMPROVEMENT ASSOCIATE (CQIA) BODY OF KNOWLEDGE MAP 2020**

The Certified Quality Improvement Associate (CQIA) Body of Knowledge (BoK) has been updated to ensure that the most current state of practice is being tested in the examination. If you would like more information on how a BoK is updated, see a description of the process on <http://asq.org/cert/faq/create-body-of-knowledge>.

Part of the updating process is to conduct a content validation survey to determine whether the topics in the 2014 BoK are still relevant to the role of quality improvement associates and to identify any new topics that have emerged since that BoK was developed. The results of the CQIA content validation survey showed that most of the topics that were in the 2014 BoK are still relevant to quality improvement associates in 2020. Nine new areas were added to the 2020 BoK and no areas were removed, except for minor editing and tweaks of subtext as indicated in Table 2.

The 2020 Certified Quality Improvement Associate Body of Knowledge (CQIA BoK) will be introduced at the **August 2020** administration. Both BoKs will be available online until October 1, 2020, at which time the 2014 BoK will be removed.

### **General comments about ASQ Body of Knowledge updates**

When the Body of Knowledge (BoK) is updated for an ASQ exam, most of the material covered in the BoK remains the same. There are very few programs that change significantly over a 5-7 year period. One of the points that we make to all the exam development committees is that ASQ Certification Exams need to reflect “the state of practice” not “the state of the art.” This helps to keep the programs grounded in what people currently do, rather than being driven by the latest hot-topic improvement idea or trend. Typically, the biggest change in any updated BoK is in how the content is organized. When a new BoK is announced and posted on the ASQ website, we also include a “BoK Map” that highlights the changes between the two Bodies of Knowledge: old and new. The BoK map also clearly identifies any new content that has been added to the exam, as well as any content that has been removed from the exam.

With regard to exam preparation materials, you should be able to use any of the reference books that are currently listed on the bibliography for the exam program. These are the source materials that the exam development committees use to write questions and verify answers.

**Specific comments about the 2020 CQIA Body of Knowledge updates**

The CQIA Body of Knowledge mostly stayed the same with more topics added to the 2020 update. Three new topics were added to Section I: Quality systems (I.A.3), Organizational culture (I.A.4), and Standardization (I.A.8). There were no major changes to content in Section II. Two new topics were added to Section III: Root cause analysis (III.D) and Risk management (III.E). Two new topics were added to Section IV: Supplier selection (IV.A) and Supplier relationship (IV.B). Section IV was separated to include Supplier topics only, removing Customer. Section V was created to include Customer only. Two new topics were added to Section V: Complaint process (V.B.2) and Customer needs (V.B.3). In addition to a total of nine new topics and minor removal/edits of content, there were two topics that received an increase in level of cognition: III.B and IV.C.

Table 1 below portrays the change in items allocated to each section of the Body of Knowledge. The name for Section III has been updated and Section IV has been split into two sections in the 2020 BoK, Section IV. Supplier Relationship, and Section V. Customer Relationship. Table 2, on page 3, presents the 2020 CQIA BoK and maps the topics to the 2014 BoK. Table 3, starting on Page 8, presents the 2014 CQIA BoK and maps the topics to the 2020 BoK. Details on changes between the two can be found below.

**Table 1. BoK Section Item Allocation**

BoK Section	2014 BoK Items
I. Quality Basics	30
II. Team Basics	20
III. Continuous Improvement Techniques	30
IV. Customer-Supplier Relations	20

BoK Section	2020 BoK Items	Change
I. Quality Basics	30	+/- 0
II. Team Basics	16	-4
III. Improvement	40	+10
IV. Supplier Relationship	7	-6
V. Customer Relationship	7	

Table 2. 2020 CQIA BoK mapped to the 2014 CQIA BoK

2014 BoK Code	2020 BoK Details	Notes
	<b>I. Quality Basics [30 Questions]</b>	Section renamed to “Quality Basics”
IA	<b>A. Terms, concepts, and principles</b>	
IA.1	<b>1. Quality definitions</b> Describe and distinguish between the common definitions of quality. (Apply)	Added “definitions” to topic name Revised subtext for clarification
IA.2	<b>2. Quality plan</b> Define a quality plan, describe its purpose and objectives to achieve the quality mission or policy. Identify the various functional areas and people having responsibility for contributing to its development. (Understand)	Updated subtext for clarification
NEW	<b>3. Quality systems</b> Understand the difference and relationship between quality assurance, quality control, and continuous quality improvement. (Understand)	
NEW	<b>4. Organizational culture</b> Understand how culture influences the success of process improvement efforts such as lean, six sigma, ISO 9001, Baldrige, and change management. (Understand)	
IA.3	<b>5. Employee involvement and empowerment</b> Define and distinguish between employee involvement and employee empowerment. Describe the benefits of both concepts. (Understand)	
IA.4	<b>6. Systems and processes</b> Define and distinguish between a system and a process and describe the interrelationships between them. Describe the components of a system – supplier, input, process, output, customer (SIPOC) – and how these components impact the system as a whole. (Analyze)	
IA.5	<b>7. Variation</b> Define and distinguish between common and special cause variation in relation to quality measures. (Understand)	
NEW	<b>8. Standardization</b> Describe how quality systems provide consistency and standardization (e.g. ISO 9001). (Remember)	
IB	<b>B. Benefits of quality</b> Describe how using quality tools, techniques, and concepts can improve processes and deliverables (including products and services), and how each benefit all parts of an organization. Describe what quality means to various stakeholders (e.g., employees, organizations, customers, suppliers, community, and interested parties) and how each can benefit from quality. (Understand)	Added “tools”, “concepts”, and “deliverables and, also added “interested parties”

2014 BoK Code	2020 BoK Details	Notes
I.C	<p><b>C. Foundations of quality</b>            Understand the key concepts and teachings of the foundational quality thought leaders including 1) Walter Shewhart, 2) W. Edwards Deming, 3) Joseph Juran, 4) Kaoru Ishikawa, 5) Philip Crosby, and 6) Armand Feigenbaum. (Understand)</p>	<p>Updated topic name</p> <p>Updated subtext to include the quality thought leaders and their key concepts and teachings and changed 1-5 from the theory to the quality leader</p> <p>Added 6) Armand Feigenbaum</p>
<b>II. Team Basics [16 Questions]</b>		Number of questions decreased from 20 to 16
II.A	<b>A. Team organization</b>	
II.A.1	<p><b>1. Team purpose</b>            Describe why teams are an effective way to identify and solve problems, and describe when, where, why, and how teams can be used effectively. (Apply)</p>	Updated subtext
II.A.2	<p><b>2. Types of teams</b>            Define and distinguish between various types of teams: process teams, continuous improvement teams, workgroups, self-managed teams, ad hoc project teams, cross-functional teams, and virtual teams. (Apply)</p>	Removed temporary teams and added virtual teams
II.A.3	<p><b>3. Value of teams</b>            Explain how a team’s efforts can support an organization’s key strategies and effect positive change throughout the organization. (Understand)</p>	
II.B	<p><b>B. Roles and responsibilities</b>            Describe the roles and responsibilities of various team stakeholders, such as 1) sponsor, 2) champion, 3) facilitator, 4) leader, 5) member, 6) scribe, and 7) timekeeper. (Understand)</p>	Added 6) scribe and 7) timekeeper
II.C	<b>C. Team formation and group dynamics</b>	
II.C.1	<p><b>1. Initiating teams</b>            Apply the elements of launching and sustaining a successful team, including establishing a clear purpose and goals, developing ground rules and schedules, gaining support from management, and obtaining commitment from team members. (Apply)</p>	
II.C.2	<p><b>2. Selecting team members</b>            Describe how to select team members based on knowledge, skill sets, and team logistics, such as an adequate number of members in relation to the size or scope of the project, appropriate representation from affected departments or areas, and diversity. (Apply)</p>	
II.C.3	<p><b>3. Team stages</b>            Describe the classic stages of team development: forming, storming, norming, performing, and adjourning. (Understand)</p>	Added “adjourning”

2014 BoK Code	2020 BoK Details	Notes
II.C.4	<p><b>4. Team conflict</b> Identify the value of team conflict and recognize how to resolve it. Define and describe groupthink and how to overcome it. Determine how good logistics, an agenda, and effective training facilitate team success. (Analyze)</p>	<p>Replaced “poor” with “good” Removed “lack of” and “become barriers” Added “facilitate”</p>
II.C.5	<p><b>5. Team decision-making</b> Describe and use different decision-making models, such as voting (majority rule, multi-voting) and consensus. Use follow-up techniques to clarify the issue to be decided, to confirm agreement on the decision, and to achieve closure. (Apply)</p>	<p>Updated subtext for clarification</p>
	<p><b>III. Improvement [40 Questions]</b></p>	<p>Updated section name Number of questions increased from 30 to 40</p>
III.B	<p><b>A. Process improvement</b></p>	
III.B.1	<p><b>1. Six Sigma concepts and tools</b> Compare six sigma concepts, tools, and techniques. Understand the DMAIC phases: define, measure, analyze, improve, and control. (Understand)</p>	<p>Updated subtopic name Removed “the different roles and responsibilities of green belts, black belts, typical project types” Changed “design” to “define”</p>
III.B.2	<p><b>2. Lean concepts and tools</b> Compare lean concepts, tools, and techniques. Understand lean tools used to reduce waste, including set-up and cycle-time reduction, pull systems (kanban), continuous improvement (kaizen), just-in-time (JIT), 5S, value stream mapping, and error-proofing (poka-yoke). (Understand)</p>	<p>Updated subtopic name Added “error-proofing (poka-yoke)”</p>
III.B.3	<p><b>3. Benchmarking</b> Define benchmarking and describe how it can be used to develop and support best practices. (Understand)</p>	
III.B.4	<p><b>4. Incremental and breakthrough improvement</b> Describe and distinguish between these two types of improvements, the steps required for each, and the type of situation in which either type would be expected. (Understand)</p>	
III.A	<p><b>B. Improvement techniques</b> Select and utilize improvement opportunity techniques and/or methodologies including 1) brainstorming, 2) plan-do-check-act (PDCA) cycle, 3) affinity diagrams, 4) cost of poor quality (COPQ) and, 5) internal audits. (Apply)</p>	<p>Updated topic name Updated cost of quality to cost of poor quality Increased cognitive level to Apply</p>

2014 BoK Code	2020 BoK Details	Notes
III.C	<p><b>C. Improvement tools</b>            Select, interpret, and apply the basic improvement tools including 1) flowcharts, 2) histograms, 3) Pareto charts, 4) scatter diagrams, 5) check sheets, 6) control charts, and 7) decision trees. (Apply)</p>	<p>Updated topic name</p> <p>Added “decision trees” and removed “Describe and interpret basic control chart concepts, including centerlines, control limits and out-of-control conditions”</p> <p>Moved “Cause and effect diagram” to III.D</p>
NEW	<p><b>D. Root cause analysis</b>            Utilize root cause tools such as the 5 whys and fishbone diagram to implement correction and corrective action. (Apply)</p>	
NEW	<p><b>E. Risk management</b>            Understand the tools and techniques used to identify and communicate risks, including failure modes and effects analysis (FMEA) and strength-weakness-opportunity-threat (SWOT). Understand prioritization of activities and projects based on risk. (Understand)</p>	
	<p><b>IV. Supplier Relationship [7 Questions]</b></p>	<p>Updated section name</p> <p>Number of questions decreased from 20 to 7</p>
NEW	<p><b>A. Supplier selection</b>            Identify the supplier selection criteria and approval process. (Remember)</p>	
NEW	<p><b>B. Supplier relationship</b>            Understand supplier relationships, associated challenges, and effects of a diverse supply base. (Understand)</p>	
IV.C	<p><b>C. Supplier performance</b>            Identify supplier performance measures, including quality performance, on-time delivery, and level of service. (Apply)</p>	<p>Updated topic name</p> <p>Increased cognitive level to Apply</p> <p>Removed “Describe commonly used metrics, including product defect rates’ functional performance, and delivery timeliness; service or process responsiveness and availability and competence of technical support”</p>
NEW	<p><b>V. Customer Relationship [7 Questions]</b></p>	

2014 BoK Code	2020 BoK Details	Notes
IV.A	<b>A. Customer identification</b> Distinguish between internal and external customers. Describe their influence on products, services, and processes. (Understand)	Updated topic name  Removed “suppliers” and “identify strategies for working with them to make improvements”
NEW	<b>B. Voice of the customer (VOC)</b>	
IV.B	<b>1. Data gathering and use</b> Describe various methods for collecting customer satisfaction feedback, including formal surveys, informal feedback, warranty claims, and focus groups. Understand the importance of using customer satisfaction feedback to drive continuous improvement. (Understand)	Added “focus groups”, “warranty claims” and updated subtext to clarify.  Move official complaints to V.B.2
NEW	<b>2. Complaint process</b> Define and identify a customer complaint and complaint handling process including documentation, action taken, and providing resolve to the customer. (Apply)	
NEW	<b>3. Customer needs</b> Understand the key elements of quality function deployment (QFD) and how it identifies and prioritizes customer expectations and needs. (Understand)	

**Table 3. 2014 CQA BoK mapped to the 2020 CQA BoK**

2014 BoK		2020 BoK		Notes
Code	Label	Code	Label	
I.A.1	Quality	I.A.1	Quality definitions	Added “definitions” to topic name Revised subtext for clarification
I.A.2	Quality plan	I.A.2	Quality plan	Updated subtext for clarification
I.A.3	Employee involvement and empowerment	I.A.5	Employee involvement and empowerment	
I.A.4	Systems and processes	I.A.6	Systems and processes	
I.A.5	Variation	I.A.7	Variation	
I.B	Benefits of quality	I.B	Benefits of quality	Added “tools”, “concepts”, and “deliverables and, also added “interested parties”
I.C	Quality philosophies	I.C	Foundations of quality	Updated topic name Updated subtext to include the quality thought leaders and their key concepts and teachings and changed 1-5 from the theory to the quality leader Added 6) Armand Feigenbaum
II.A.1	Team purpose	II.A.1	Team purpose	Updated subtext
II.A.2	Types of teams	II.A.2	Types of teams	Removed temporary teams and added virtual teams
II.A.3	Values of teams	II.A.3	Values of teams	
II.B.1	Sponsor	II.B.1	Sponsor	
II.B.2	Champion	II.B.2	Champion	
II.B.3	Facilitator	II.B.3	Facilitator	
II.B.4	Leader	II.B.4	Leader	
II.B.4	Member	II.B.5	Member	
II.C.1	Initiating teams	II.C.1	Initiating teams	

2014 BoK		2020 BoK		Notes
Code	Label	Code	Label	
II.C.2	Selecting team members	II.C.2	Selecting team members	
II.C.3	Team stages	II.C.3	Team stages	Added “adjourning”
II.C.4	Team conflict	II.C.4	Team conflict	Replaced “poor” with “good” Removed “lack of” and “become barriers” Added “facilitate”
II.C.5	Team decision-making	II.C.5	Team decision-making	Updated subtext for clarification
III.A.1	Brainstorming	III.B.1	Brainstorming	Increased cognitive level to Apply
III.A.2	Plan-do-check-act (PDCA) cycle	III.B.2	Plan-do-check-act (PDCA) cycle	Increased cognitive level to Apply
III.A.3	Affinity diagrams	III.B.3	Affinity diagrams	Increased cognitive level to Apply
III.A.4	Cost of quality	III.B.4	Cost of poor quality (COPQ)	Increased cognitive level to Apply Added the word poor to number 4
III.A.5	Internal audits to identify improvement opportunities	III.B.5	Internal audits	Increased cognitive level to Apply
III.B.1	Six Sigma	III.A.1	Six sigma concepts and tools	Updated subtopic name Removed “the different roles and responsibilities of green belts, black belts, typical project types” Changed “design” to “define”
III.B.2	Lean	III.A.2	Lean concepts and tools	Updated subtopic name Added “error-proofing (poka-yoke)”
III.B.3	Benchmarking	III.A.3	Benchmarking	
III.B.4	Incremental and breakthrough improvement	III.A.4	Incremental and breakthrough improvement	
III.C.1	Flowcharts	III.C.1	Flowcharts	
III.C.2	Histograms	III.C.2	Histograms	

2014 BoK		2020 BoK		Notes
Code	Label	Code	Label	
<b>III.C.3</b>	Pareto charts	<b>III.C.3</b>	Pareto charts	
<b>III.C.4</b>	Scatter diagrams	<b>III.C.4</b>	Scatter diagrams	
<b>III.C.5</b>	Cause and effect diagrams	<b>III.D</b>	Root Cause Analysis	Removed and placed in III.D with new content “root cause analysis”
<b>III.C.6</b>	Check sheets	<b>III.C.5</b>	Check sheets	
<b>III.C.7</b>	Control charts	<b>III.C.6</b>	Control charts	Removed “Describe and interpret basic control chart concepts, including centerlines, control limits and out-of-control conditions”
<b>IV.A</b>	Internal and external customers and suppliers	<b>V.A</b>	Customer identification	Changed topic name Removed “suppliers” and “identify strategies for working with them to make improvements”
<b>IV.B</b>	Customer satisfaction	<b>V.B.1</b>	Data gathering and use	Added “focus groups”, “warranty claims” and updated subtext to clarify. Moved official complaints to V.B.2
<b>IV.C</b>	Supplier management	<b>IV.C</b>	Supplier performance	Increased cognitive level to Apply Removed “Describe commonly used metrics, including product defect rates’ functional performance, and delivery timeliness; service or process responsiveness and availability and competence of technical support”