



ANSI/ MEDBIQ EA.10.1-2017 Educational Achievement Specifications



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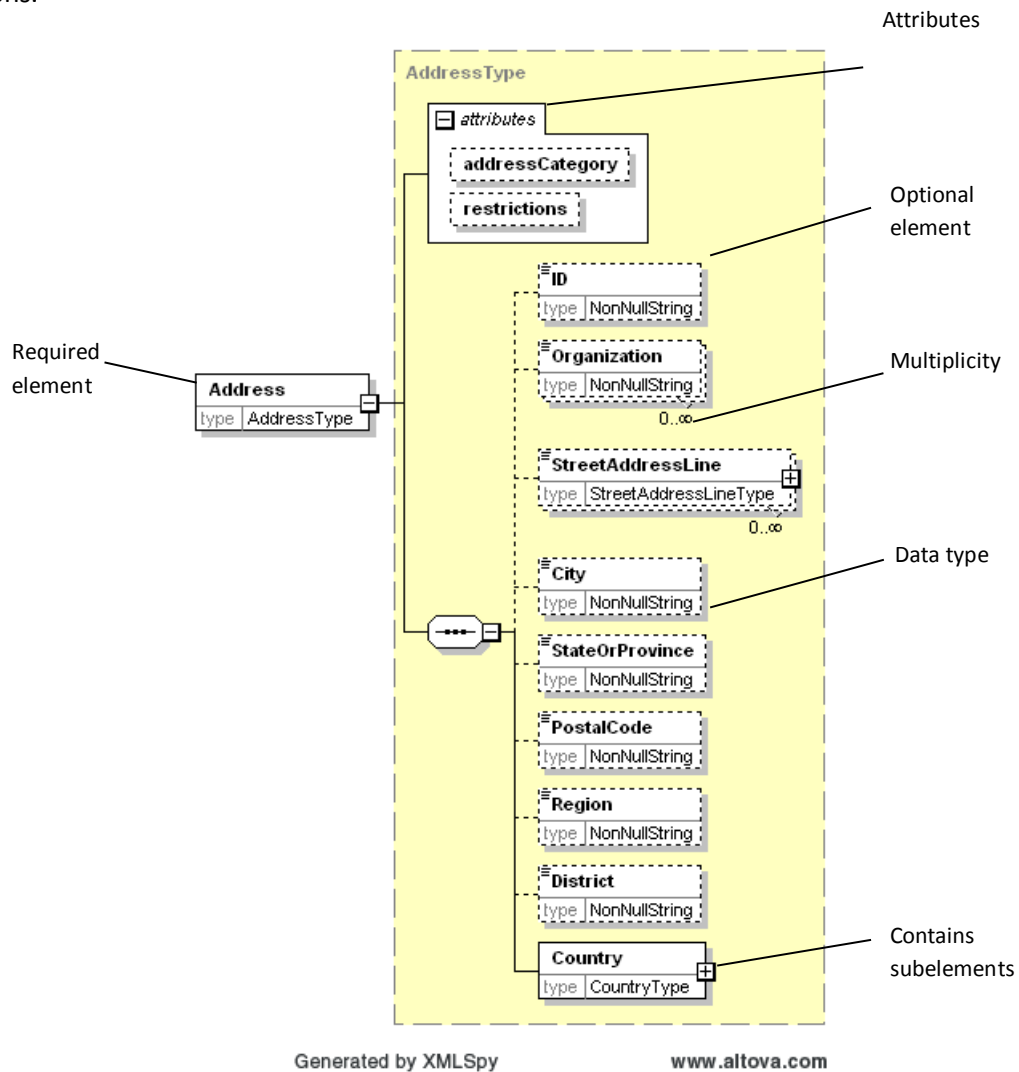
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2 Documentation Conventions

This document uses the following conventions:

Convention	Description
Bold Text	When used with an XML element name, indicates that the element contains subelements.
<i>Italics</i>	When used in an XML element description, an attribute of the XML element.
Monospaced type	Sample XML tags, code, schema, or portion thereof.

The document uses graphics generated by Altova XML Spy® software, which uses the following graphical conventions.



3 Conformance

To conform to the MedBiquitous Educational Achievement specification, an XML document shall:

- Validate against the Educational Achievement XML Schema available at:
<http://ns.medbiq.org/educationalachievement/v1/educationalachievement.xsd>
- Conform to any additional requirements stated in this specification.
- Optionally include elements not defined in this document only in permitted areas and only if those elements are namespace qualified.

4 Common Data Types

Most of the elements and attributes in MedBiquitous XML documents use the data types defined by the W3C XML 1.0 schema definition [XSD]. In some cases MedBiquitous creates its own data types as part of its best practices or to meet a specific requirement. Commonly used data types are defined in the common.xsd file. For more information about common data types, see:

<http://www.medbiq.org/sites/default/files/CommonSpecifications.pdf>

4.1 Identifying Data through XPath

XPath is a language for finding information in an XML document. XPath is used to navigate through elements and attributes in an XML document. It is a W3C Standard.

The MedBiquitous Curriculum Inventory uses XPath to point to data and resources in a single XML report.

XPath expressions use the following construction:

<code>/SomeElement/SomeSubElement</code>	Selects all SomeSubElements that are subelements of SomeElement.
<code>/SomeElement/SomeSubElement[@test='x']</code>	Selects all SomeSubElements that have an attribute named test with a value of 'x' that are subelements of SomeElement.
<code>/SomeElement/SomeSubElement/text()</code>	Selects all element content (text) in all SomeSubElements that are subelements of SomeElement.

Example:

```
/EducationalAchievement/AchievementInContext/Curriculum/Events/Event[@id='123']
```

This example provides a reference to the Event with an id of 123.

5 Introduction

This document describes MedBiquitous Educational Achievement specifications in detail. It is intended for use by anyone who wants to develop tools or implement electronic systems for reporting an individual's achievements, including data about the individual's performance in relation to defined competencies.

As learners progress through the continuum of health professions education, they attain a number of achievements, including successfully passing required exams (e.g. licensure and certification), attaining necessary competencies and successful completion of training milestones and training phases (e.g. graduation from medical school and completion of residency). The achievements are important, particularly for learner self-assessment of and active participation in the learning process and for those assessing the learners' progress along the education, training, and practice continuum. Technology standards are necessary to enable common ways of expressing and transporting these data between systems.

The objective of the standard is to provide a consistent format and structure for data concerning learners' educational achievement. The standard allows extensions so that data beyond the core set identified in this document may be communicated to other organizations. This standard is intended to work in concert with other standards.

These specifications intentionally excludes the following from their scope:

- Credentials awarded as a result of achievements, including degrees, certifications, and licenses.
- Continuing education.
- Activities completed as part of a maintenance of certification or continuous certification process that are not assessments carried forth from prior GME training.

Credentials may be described using the MedBiquitous Professional Profile. Continuing education, maintenance of certification, and continuous certification activities may be described using the MedBiquitous Activity Report. Information on these standards is available through the MedBiquitous website (http://medbiq.org/std_specs/standards/index.html).

6 Other Standards, Specifications, or Schema Referenced

This standard references the following standards, specifications, or schemas. The informative references here, which describe how these references are used, link to formal references appearing later in this document.

- ANSI/MEDBIQ CF.10.1-2012, Competency Framework [[Competency Framework](#)]
Competency Framework provides a way of specifying the hierarchical and non-hierarchical relationships among a set of related competencies, learning objectives, learning outcomes, etc. The Performance framework may define performance for competencies in a competency framework.
- ANSI/MEDBIQ CI.10.1-2013, Curriculum Inventory [[Curriculum Inventory](#)]
Curriculum Inventory allows Educational Achievement data to be placed within the context of a curriculum of study.
- ANSI/MEDBIQ LO.10.1-2008, Healthcare Learning Object Metadata [[Healthcare LOM](#)]
Healthcare LOM extends the IEEE LOM standard and provides a format for describing healthcare learning resources and activities. Healthcare LOM is used to encode keywords for events.
- ANSI/MEDBIQ PF.10.1-2015, Performance Framework [[Performance Framework](#)]
Performance Framework provides a common format for defining levels of performance in relation to one or more specific competencies. Achievement data may reference a Performance Framework used in assessing an individual's level of performance.
- ANSI/MEDBIQ PP.10.1-2008, Healthcare Professional Profile [Professional Profile]
The Professional Profile provides the format for details about the institution in which an educational achievement occurred.
- DCMII Metadata terms [[DCMII](#)]
The Educational Achievement specification uses the DCMII format element to indicate the format of a referenced resource.
- MedBiquitous Competency Object [[Competency Object](#)]
Competency Object provides a common format for representing competencies, learning objectives, learning outcomes, etc. Educational Achievement may specify learner assessment results in relation to specific competencies.

- Implementation Guide to the Postsecondary Electronic Standards Council XML Standard Format for Education Test Score Reporting Version 1.0.0.1. [\[ETS\]](#)
The Postsecondary Electronic Standards Council (PESC) Education Test Score Reporting standard provides a detailed format for assessment results.
- Resource Description Framework [\[RDF\]](#)
RDF is used to link to competency frameworks and performance frameworks as necessary. RDF is the technology used to establish semantic web relationships.
- MedBiquitous Common Specifications [\[Common\]](#)
The MedBiquitous Common Specification defines data types commonly used across MedBiquitous specifications.
- XHTML™ 1.0 The Extensible HyperText Markup Language (Second Edition), A Reformulation of HTML 4 in XML 1.0. W3C Recommendation 26 January 2000, revised 1 August 2002. [\[XHTML\]](#)
XHTML provides the format for supporting information embedded in the competency framework.

7 Terminology

Much of the terminology in this area is ill-defined or ambiguous, often employed differently (and sometimes interchangeably) by different professionals [[Harden 1](#)]. To ensure clarity and consistency we provide working definitions of the terminology we use in the context of this paper:

- **Competency** – a statement describing a specific ability, or set of abilities, requiring specific knowledge, skill and/or attitude. Competencies are used to set performance standards that must be met [[Albanese 1](#)]
- **Competency Framework** – an organized and structured representation of a set of interrelated and purposeful competency objects. [[Competency Framework](#)]
- **Competency Object** – an umbrella term used to describe any abstract statement of learning or performance expectations, and information related to the statement. Statements can be learning outcomes, competencies per se, learning objectives, professional roles, topics, classifications/collections, etc. The Competency Object may include additional data to expand on or support the statement. The Object is abstract in the sense that it does not inherently contain information about connections of the statement to individuals or events or other objects. [[Competency Framework](#)]
- **Educational Trajectory** – the path of an individual learner through one or more programs of study. Educational Trajectory may include a sequence of formal curricular activities and events, informal professional development activities and events, and breaks in matriculation. [[Educational Trajectory](#)]
- **Entrustment** - a decision to entrust the learner to perform certain activities without supervision.
- **Event** – a single education or assessment activity documented in a curriculum. Examples of events include: lecture, problem-based learning, simulation, laboratory, clinical experience – ambulatory, and clinical experience – inpatient, to name a few. [[Curriculum Inventory](#)]
- **Integration Block** – An integrating concept for a curriculum, such as a theme. [[Curriculum Inventory](#)]
- **Performance** – a demonstration of practice, such as patient care. Can be used as evidence of one or more competencies. [[Competency Framework](#)]
- **Performance criteria** – An explicit description of measurable behaviors indicative of achievement of a specific performance level of a specific competency. Note that this is what the pediatrics group refers to as a "milestone."
- **Performance Framework** – A set of performance levels and criteria associated with a competency framework.

- **Sequence Block** – an organizational component of a curriculum, such as a year, phase, course, module, etc. Sequence blocks can be nested to show a variety of organizational methods. [\[Curriculum Inventory\]](#)

8 Educational Achievement Schema

The following sections explain the Educational Achievement Schema grammar. Values in bold under XML Tags column indicate that the element has subelements.

All the elements having subelements will be defined in separate sections. All elements without subelements will be defined within the appropriate element sections that use them.

8.1 EducationalAchievement

EducationalAchievement is the root element. It contains subelements that describe a learner's achievements in detail. EducationalAchievement must occur once within an Educational Achievement document.



EducationalAchievement Element Information

Element	Description	Required	Multiplicity	Data type
EducationalAchievement	EducationalAchievement is the root element. It describes a learner's educational achievements in detail.	Required	1	Container
Date	The date of this educational achievement record.	Required	1	Date

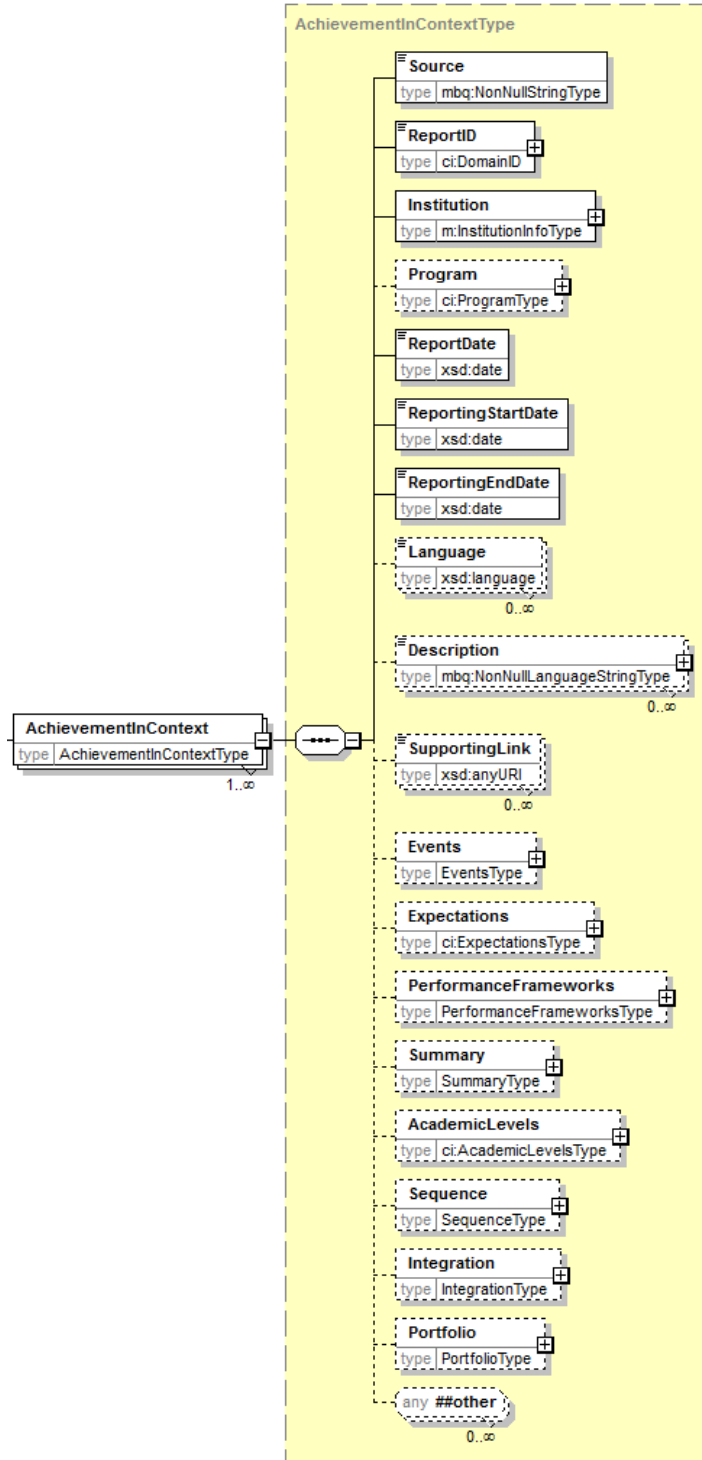
Element	Description	Required	Multiplicity	Data type
Learner	Information about the learner whose educational achievement data are described. Learner uses the MemberType from the MedBiquitous Healthcare Professional Profile [Professional Profile] .	Required	1	Container For more information, see ANSI/MEDBIQ 10.1-2008 Healthcare Professional Profile.
AchievementInContext	Information about a learner's achievements within the context of a curriculum of instruction and/or assessment.	Required	1 or more	Container
Elements from other namespaces	EducationalAchievement may include elements from other namespaces provided those elements are namespace qualified.	Optional	0 or 1	Any

Example:

```
<ea:EducationalAchievement>
  <ea:Date>2012-05-31</ea:Date>
  <ea:Learner>
    . . .
  </ea:Learner>
  <ea:AchievementInContext>
    . . .
  </ea:AchievementInContext>
  <ea:AchievementInContext>
    . . .
  </ea:AchievementInContext>
</ea:EducationalAchievement>
```

8.2 AchievementInContext

AchievementInContext is a subelement of EducationalAchievement. It contains subelements that describe a learner's achievements within the context of a curriculum of instruction and/or assessment.



AchievementInContext Element Information

Element	Description	Required	Multiplicity	Data type
AchievementInContext	Information about a learner's achievements within the context of a curriculum of instruction and/or assessment.	Required	1 or more	Container
Source	The source of this achievement data.	Required	1	NonNull StringType For more information, see [Common]
ReportID	<p>A unique identifier for this set of achievement data. ReportID has the following attribute:</p> <p><i>domain</i></p> <p>Defines the organization that is the source of the unique identifier. Domain has the following format:</p> <p><i>idd:domainname:localidentifier</i></p> <p>Where:</p> <p><i>domainname</i> is an internet domain name owned by the organization issuing the unique ID and</p> <p><i>localidentifer</i> is a local identifier for the type of unique ID.</p> <p>For example:</p> <p><code>idd:ucsf.edu:somreport</code></p>	Required	1	NonNull StringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
Institution	<p>Institution contains the name, identifier, and address of the institution where the educational achievements were made.</p> <p>Institution uses the InstitutionInfoType from the MedBiquitous Healthcare Professional Profile [Professional Profile].</p>	Required	1	Container For more information, see ANSI/MEDBIQ 10.1-2008 Healthcare Professional Profile.
Program	<p>Program contains the name and identifier of the program where the achievements were made.</p> <p>Program uses the ProgramType from the MedBiquitous Curriculum Inventory [Curriculum Inventory].</p>	Optional	0 or 1	Container For more information, see MedBiquitous Curriculum Inventory.
ReportDate	The date the report was created.	Required	1	Date
ReportingStartDate	The first day of the period that these achievement data cover.	Required	1	Date
ReportingEndDate	The last day of the period that these achievement data cover.	Required	1	Date
Language	The language of the achievement data. For example, en-US indicates US English.	Optional	0 or more	Language
Description	A free text description of the curriculum in which the learner was engaged.	Optional	0 or more	NonNull LanguageString For more information, see [Common].

Element	Description	Required	Multiplicity	Data type
SupportingLink	<p>A link to supporting information, such as a pictorial representation of the curriculum or a document explaining the rationale behind the curriculum structure.</p> <p>The link must be a URN or URL. For example: http://www.example.edu/curriculum.pdf</p>	Optional	0 or more	anyURI
Events	<p>Events contains information about the education and assessment events the learner experienced.</p> <p>For more information, see section Events.</p>	Optional	0 or 1	Container
Expectations	<p>Expectations contains subelements that describe the competencies, learning objectives, and learning outcomes implemented in a curriculum and how they are organized.</p> <p>Expectations uses the ExpectationsType from the MedBiquitous Curriculum Inventory [Curriculum Inventory].</p>	Optional	0 or 1	Container For more information, see MedBiquitous Curriculum Inventory.
PerformanceFrameworks	<p>PerformanceFrameworks contains subelements that describe sets of performance levels, entrustment levels, and criteria associated with competency frameworks.</p> <p>For more information, see section PerformanceFrameworks.</p>	Optional	0 or 1	Container
Summary	<p>Summary contains subelements that describe the learner's performance across the curriculum.</p> <p>For more information, see section Summary.</p>	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
AcademicLevels	AcademicLevels contains subelements that describe information about the academic levels defined for this curriculum. Program uses the AcademicLevelsType from the MedBiquitous Curriculum Inventory [Curriculum Inventory].	Optional	0 or 1	Container For more information, see MedBiquitous Curriculum Inventory.
Sequence	Sequence contains subelements that describe information about how the learner's curriculum of study is organized over a period of time. For more information, see section Sequence.	Optional	0 or 1	Container
Integration	Integration contains subelements that describe how a curriculum is integrated. For more information, see section Integration.	Optional	0 or 1	Container
Portfolio	Portfolio includes the learner's educational trajectory and other portfolio data related to this record of achievement.	Optional	0 or 1	Container
Elements from other namespaces	AchievementInContext may include elements from other namespaces provided those elements are namespace qualified.	Optional	0 or 1	Any

Example:

```

<ea:AchievementInContext>
  <ea:Source>University of Toronto</ea:Source>
  <ea:ReportID domain="idd:utoronto.ca:reports">123456</ea:ReportID>
  <ea:Institution>
    <m:InstitutionName>University of Toronto Faculty of
    Medicine</m:InstitutionName>
    <m:InstitutionID
    domain="idd:ecfmg.org:imed">123456</m:InstitutionID>
  </ea:Institution>

```

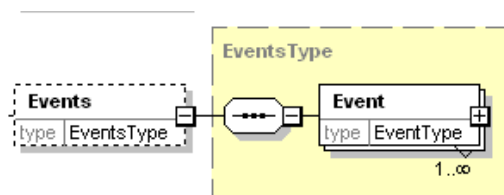
```

<ea:Program>
  <ci:ProgramName>MD program</ci:ProgramName>
  <ci:ProgramID domain="idd:aamc.org:program">123456</ci:ProgramID>
  <ci:EducationalContext>undergraduate professional
education</ci:EducationalContext>
  <ci:Profession>physician</ci:Profession>
</ea:Program>
<ea:ReportDate>2011-10-05</ea:ReportDate>
<ea:ReportingStartDate>2005-06-01</ea:ReportingStartDate>
<ea:ReportingEndDate>2009-05-13</ea:ReportingEndDate>
<ea:Language>en-us</ea:Language>
<ea:Events>
. . .
</ea:Events>
<ea:Expectations>
. . .
</ea:Expectations>
<ea:PerformanceFrameworks>
. . .
</ea:PerformanceFrameworks>
<ea:Summary>
. . .
</ea:Summary>
<ea:AcademicLevels>
. . .
</ea:AcademicLevels>
<ea:Sequence>
. . .
</ea:Sequence>
<ea:Integration>
. . .
</ea:Integration>
<ea:Portfolio>
. . .
</ea:Portfolio>

```

8.3 Events

Events contains information about the education and assessment events the learner experienced.



Events Element Information

Element	Description	Required	Multiplicity	Data type
Events	Events contains subelements that describe information about the education and assessment events that comprise the curriculum.	Optional	0 or 1	Container
Event	Event contains subelements that describe a single education or assessment event. Examples of events include: lecture, problem-based learning activity, virtual patient activity, seminar, lab, OSCE, and written exam, to name a few. For more information, see section Event.	Required	1 or more	Container

Example:

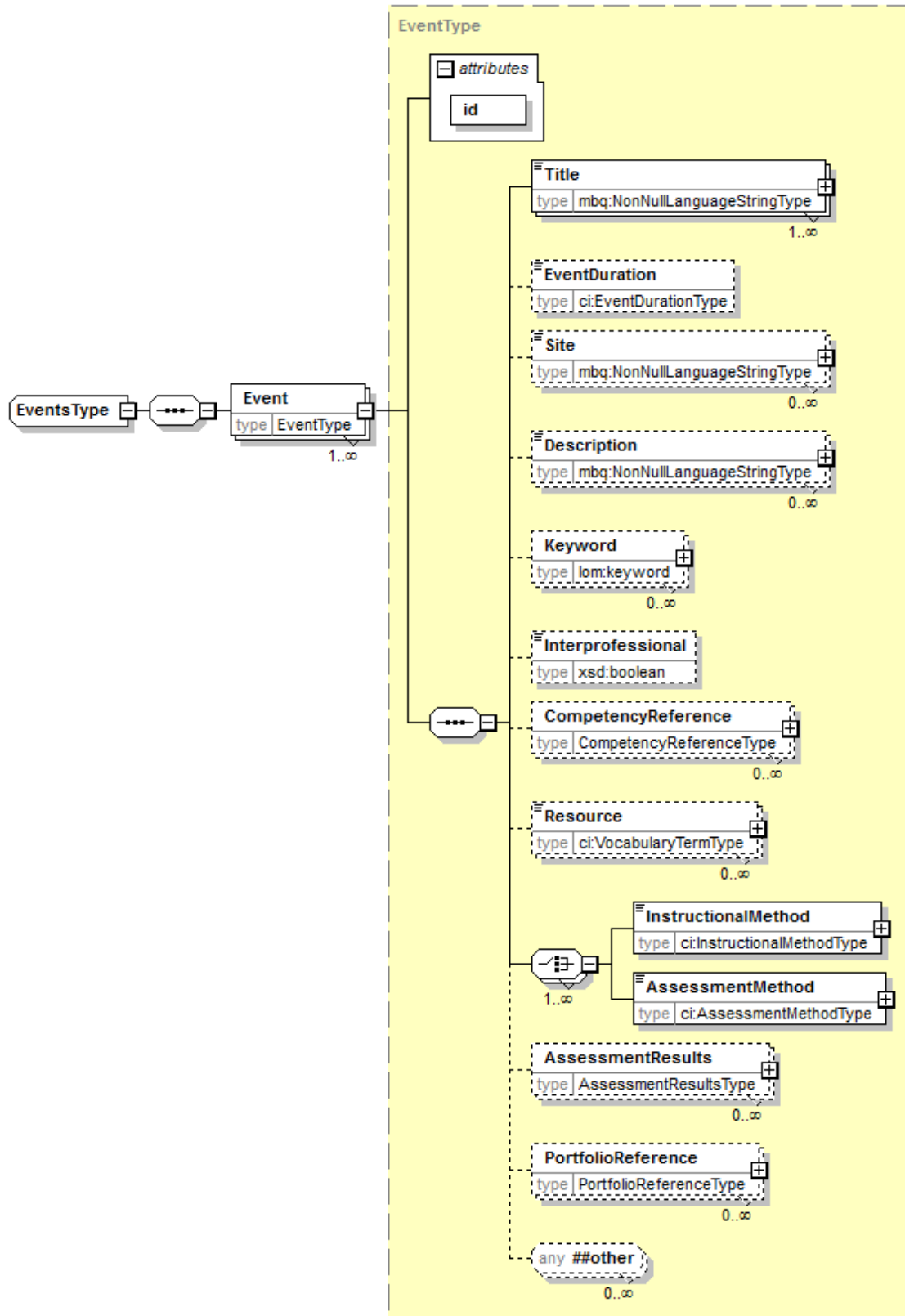
```

<ea:Events>
  <ea:Event id="e1">
    . . .
  </ea:Event>
  <ea:Event id="e2">
    . . .
  </ea:Event>
  <ea:Event id="e3">
    . . .
  </ea:Event>
  <ea:Event id="e4">
    . . .
  </ea:Event>
  <ea:Event id="e5">
    . . .
  </ea:Event>
</ea:Events>

```

8.3.1 Event

Event is a single education or assessment activity the learner experienced. Examples of events include: lecture, problem-based learning, simulation, laboratory, clinical experience – ambulatory, and clinical experience – inpatient, Exam - Institutionally Developed, Clinical Performance, and multisource assessment, to name a few. Events can be combined to form a sequence block within a curriculum. Events may reference learning objectives, competencies, or learning outcomes captured in expectations, as well as curricular themes, known as integration blocks. Events may contain assessment results.



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www.altova.com

Event Element Information

Element	Description	Required	Multiplicity	Data type
Event	<p>Event contains subelements that describe a single education or assessment event. Examples of events include: lecture, problem-based learning activity, virtual patient activity, seminar, lab, OSCE, and written exam, to name a few.</p> <p>Event has the following attribute:</p> <p><i>id</i> A unique identifier for this event. Use of the id attribute is required.</p>	Required	1 or more	Container
Title	A title for this education or assessment event.	Required	1	NonNullLanguage StringType For more information, see [Common]
EventDuration	The duration of the event in hours. For example, PT20H indicates 20 hours.	Optional	1	Duration (restricted to hours)
Site	The site where the sequence block occurred. Site may be used to indicate the clinical site associated with the learning. For example, Nonesuch Regional Medical Center Outpatient Clinic.	Optional	0 or 1	NonNullLanguage StringType For more information, see [Common]
Description	A free text description of the education or assessment event.	Optional	0 or 1	NonNullLanguage StringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
Keyword	An important concept or topic related to the event. Keyword uses the keyword type and custom attributes from Healthcare Learning Object Metadata [Healthcare LOM].	Optional	0 or more	For more information see ANSI/MEDBIQ LO.10.1-2008.
Interprofessional	An indicator as to whether or not this event is designed to engage students of different health professions as teams. The default value is false.	Optional	0 or 1	Boolean
CompetencyReference	CompetencyReference contains subelements that reference either a competency associated with this event. For more information, see section CompetencyReference.	Optional	0 or more	Container
Resource	A resource used in this event. A recommended list is available as part of the Curriculum Inventory Standardized Instructional and Assessment Methods and Resources [Vocabularies].	Optional	0 or more	NonNull StringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
InstructionalMethod	<p>An instructional method used in this event. It is strongly recommended that communities using this specification to share information use an agreed upon set of terms. A recommended list is available as part of the Curriculum Inventory Standardized Instructional and Assessment Methods and Resources [Vocabularies].</p> <p>InstructionalMethod has the following attribute:</p> <p><i>primary</i> Indicates whether or not this instructional method is the primary instructional method of the event. Use of the primary attribute is required. Valid values are true and false. One instructional method must be marked as primary for an instructional event.</p> <p><i>source</i> The taxonomy or vocabulary serving as the source of the InstructionalMethod.</p> <p><i>sourceID</i> The unique identifier assigned to this taxonomic reference within the taxonomy or vocabulary</p>	Either InstructionalMethod or AssessmentMethod is required	0 or more	Non-null string

AssessmentMethod	<p>An assessment method used in this event. It is strongly recommended that communities using this specification to share information use an agreed upon set of terms. A recommended list is available as part of the Curriculum Inventory Standardized Instructional and Assessment Methods and Resources [Vocabularies].</p> <p>AssessmentMethod has the following attribute:</p> <p><i>purpose</i> Indicates whether the assessment is used for formative or summative assessment. Use of the purpose attribute is required. Valid values are Formative and Summative.</p> <p><i>source</i> The taxonomy or vocabulary serving as the source of the assessment method.</p> <p><i>sourceID</i> The unique identifier assigned to this taxonomic reference within the taxonomy or vocabulary</p>	Either InstructionalMethod or AssessmentMethod is required	0 or more	Non-null string
AssessmentResults	<p>AssessmentResults contains subelements that provide detailed information on the results of any assessment included in this event.</p> <p>For more information, see section AssessmentResults.</p>	Optional	0 or more	Container
PortfolioReference	<p>PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry providing supporting information related to this event.</p> <p>For more information, see section PortfolioReference.</p>	Optional	0 or more	Container
Elements from other namespaces	<p>Event may include elements from other namespaces provided those elements are namespace qualified.</p>	Optional	0 or 1	Any

Example:

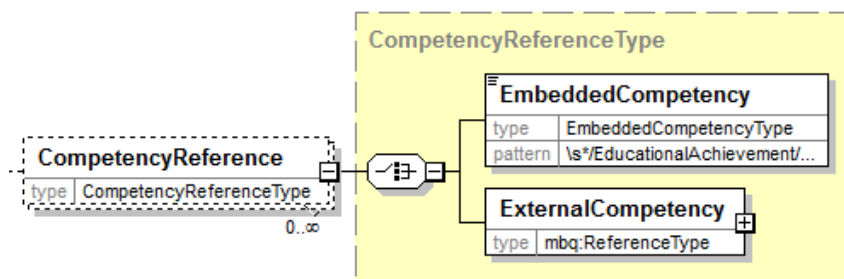
```

<ea:Event id="mdl1">
  <ea:Title>Pediatric Level 3 360 Degree Feedback</ea:Title>
  <ea:EventDuration>PT2H</ea:EventDuration>
  <ea:Description>Residents receive feedback from supervisors, peers, nurses, and
patients.</ea:Description>
  <ea:Keyword id="D007318" source="mesh">
    <lom:string>Inservice Training</lom:string>
  </ea:Keyword>
  <ea:Interprofessional>false</ea:Interprofessional>
  <ea:CompetencyObjectReference>/EducationalAchievement/AchievementInContext/Expectations/CompetencyObj
ect[lom:lom/lom:general/lom:identifier/lom:entry='
http://acgme.org/competencies/PC1']</ea:CompetencyObjectReference>
  <ea:Resource>Real Patient</ea:Resource>
  <ea:AssessmentMethod purpose="Formative">Multisource Feedback</ea:AssessmentMethod>
  <ea:AssessmentResults>
    . . .
  </ea:AssessmentResults>
  <ea:PortfolioReference>
    <ea:URIReference>http://portfolio.umaryland.edu/jdoel/sdgh</ea:URIReference>
  </ea:PortfolioReference>
</ea:Event>

```

8.3.2 CompetencyReference

CompetencyReference contains subelements that reference a competency associated with an event, sequence block, score, integration block, or entrustment decision. The competency may be embedded in this record of achievements or it may exist in an external document.



CompetencyReference Element Information

Element	Description	Required	Multiplicity	Data type
CompetencyReference	CompetencyReference contains subelements that reference either a competency associated with this event.	Optional	0 or more	Container
EmbeddedCompetency	<p>A reference to the unique id for a learning objective, competency, learning outcome, (all of which are known as competency objects). EmbeddedCompetency has the following format:</p> <pre>/EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry='X']</pre> <p>All in one line, where X is the id of a Competency Object in this achievement record.</p>	Either EmbeddedCompetency or ExternalCompetency is required.	0 or 1	Restricted (to conformant XPath) See section Identifying Data through XPath for more information
ExternalCompetency	A reference to a competency in an external document. The ExternalCompetency uses the ReferenceType data type from the MedBiquitous Common Specifications.	Either EmbeddedCompetency or ExternalCompetency is required.	0 or 1	Container For more information, see [Common] .

AssessmentResults Element Information

Element	Description	Required	Multiplicity	Data type
AssessmentResults	AssessmentResults contains subelements that provide detailed information on the results of any assessment.	Optional	0 or 1	Container
Score	Score contains subelements that describe the overall score on this assessment in detail. Several different types of scores may be represented. For more information, see section Score.	Optional	0 or 1	Container
Evidence	Evidence contains a description of and optional reference to the evidence considered when producing these assessment results. For more information, see section Evidence.	Optional	0 or 1	Container
SubScore	SubScore contains subelements that describe a subscore for this assessment in detail. Several different types of subscores may be represented. For more information, see section SubScore.	Optional	0 or more	Container
AssessmentStartDate	The start date of this assessment.	Required	1	Date
AssessmentEndDate	The end date of this assessment.	Required	1	Date
LearnerNotes	Any notes or reflections the learner has recorded related to this assessment.	Optional	0 or 1	NonNullLanguageStringType For more information, see [Common]
FacultyNotes	Any notes the faculty has recorded related to this assessment.	Optional	0 or 1	NonNullLanguageStringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
PortfolioReference	PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry providing supporting information related to these assessment results. For information, see section PortfolioReference.	Optional	0 or more	Container
Elements from other namespaces	AssessmentResults may include elements from other namespaces provided those elements are namespace qualified.	Optional	0 or 1	Any

Example:

```

<ea:AssessmentResults>
  <ea:SubScore>
    <PercentCorrectValue>78</PercentCorrectValue>
    <ea:Title>Patient Care</ea:Title>
    <ea:CompetencyObjectReference>
      /EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry=' http://acgme.org/competencies/PC' ]
    </ea:CompetencyObjectReference>
  </ea:SubScore>
  <ea:SubScore>
    <PercentCorrectValue>75</PercentCorrectValue>
    <ea:Title>Professionalism</ea:Title>
  </ea:SubScore>
  <ea:SubScore>
    <PercentCorrectValue>70</PercentCorrectValue>
    <ea:Title>Communication</ea:Title>
  </ea:SubScore>
  <ea>Date>2011-09-10</ea>Date>

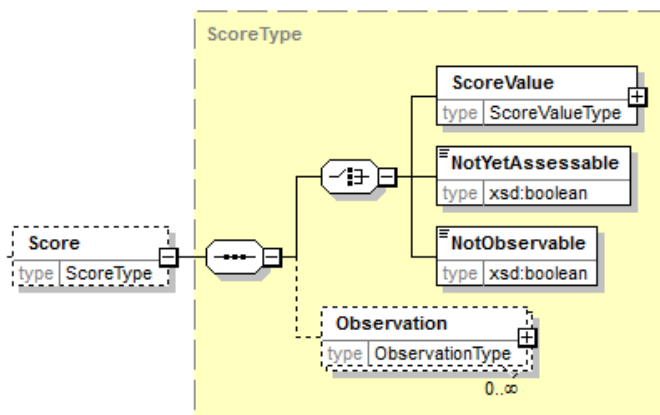
```

```

</ea:AssessmentResults>
<ea:PortfolioReference>
  <ea:URIReference>http://portfolio.ucsf.edu/pshelley/qwer</ea:URIReference>
</ea:PortfolioReference>
    
```

8.3.4 Score

Score contains subelements for describing the overall score on this assessment in detail. If a learner is not yet assessable, that may be indicated as well.



Score Element Information

Element	Description	Required	Multiplicity	Data type
Score	Score contains subelements for describing the overall score on this assessment or indicating if the learner is not yet assessable.	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
ScoreValue	ScoreValue contains subelements for describing the overall score on this assessment in detail.	Either ScoreValue or NotYetAssessable is required.	0 or 1	Container
NotYetAssessable	Indicates if the learner is not yet assessable in this area. Indicates if the learner is not yet assessable in this area due to role or level of experience. Valid values are true, false.	Either ScoreValue, NotYetAssessable, or NotObservable is required.	0 or 1	Boolean
NotObservable	Indicates if the assessment could not be performed because the learner did not demonstrate the behavior for the observer in an observation-based assessment. Valid values are true, false.	Either ScoreValue, NotYetAssessable, or NotObservable is required.	0 or 1	Boolean
Observation	Contains details about an observation contributing to the score.	Optional	0 or more	Container

Example 1:

```
<ea:Score>
  <ea:NotYetAssessable>true</ea:NotYetAssessable>
</ea:Score>
```

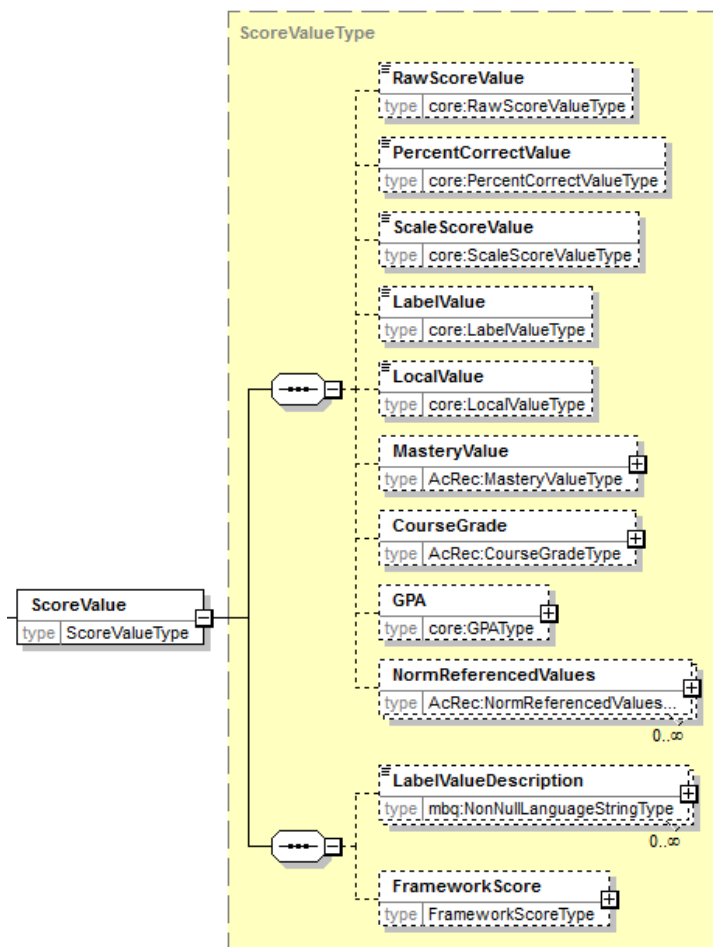
Example 2:

```
<ea:Score>
  <ea:ScoreValue>
    . . .
  </ea:ScoreValue>
</ea:Score>
```

8.3.5 ScoreValue

ScoreValue contains subelements for describing the overall score on this assessment in detail. Several different types of scores may be represented, including descriptive scores (e.g. proficient) and performance levels or milestones.

ScoreValueType is an extension of the PESC EducationTestScoresType from the PESC XML Education Test Score Reporting. For more information, visit: http://www.pesc.org/interior.php?page_id=132 [ETS].



ScoreValue Element Information

Element	Description	Required	Multiplicity	Data type
ScoreValue	Score contains subelements that describe the overall score on this assessment in detail.	Optional	0 or 1	Container
RawScoreValue PercentCorrectValue ScaleScoreValue LabelValue MasteryValue CourseGrade GPA NormReferencedValues	See the Implementation Guide to the Postsecondary Electronic Standards Council XML Standard Format for Education Test Score Reporting Version 1.0.0.1 description of EducationTestScores [ETS] and the updated Academic Record v 1.7.0 schema, which has updates to the Norm Referenced Values to accommodate reporting of score distribution histograms.			
LabelValueDescription	A description of the label that describes the score value. For example, if the label value is proficient, description provides more information about the meaning of that value.	Optional	0 or more	NonNullLanguageStringType For more information, see [Common]
FrameworkScore	FrameworkScore contains subelements that describe the learner's score in relation to a performance framework. For more information, see section FrameworkScore.	Optional	0 or 1	Container

Example:

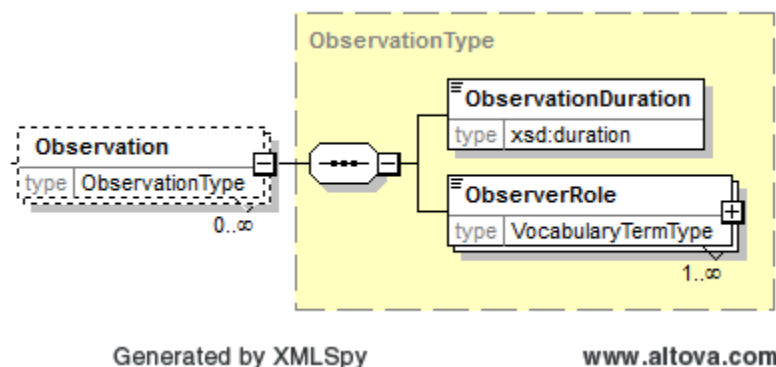
`<ea:Score>`


```

<MasteryValue>
  <MasteredIndicator>true</MasteredIndicator>
  <CutScore>80</CutScore>
</MasteryValue>
</ea:Score>
    
```

8.3.6 Observation

Observation contains details about an observation contributing to the score or subscore.



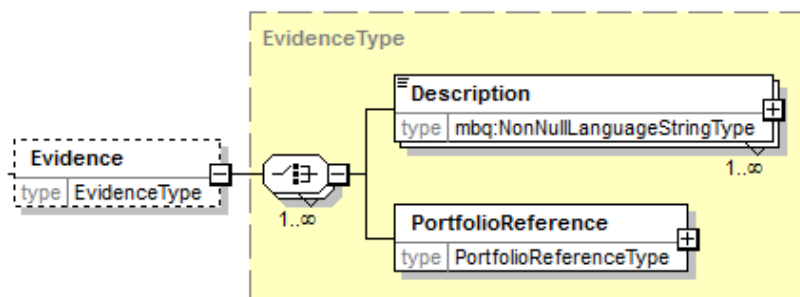
Observation Element Information

Element	Description	Required	Multiplicity	Data type
Observation	Contains details about an observation contributing to the score or subscore.	Optional	0 or more	Container
ObservationDuration	The duration of the observation period used as the basis for the assessment.	Required	1	Duration

Element	Description	Required	Multiplicity	Data type
ObserverRole	<p>The role of the individual observing the learner for this assessment. For example, physician. ObserverRole has the following attributes:</p> <p><i>source</i> Specifies the terminology or vocabulary from which the observer role is taken. For example, UMLS.</p> <p><i>sourceID</i> id defines the unique identifier associated with this term in the structured terminology or vocabulary. For example, D010820.</p>	Required	1 or more	

8.3.7 Evidence

Evidence contains a description of and optional reference to the evidence considered when producing assessment results.



Evidence Element Information

Element	Description	Required	Multiplicity	Data type
Evidence	Evidence contains a description of and optional reference to the evidence considered when producing these assessment results.	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
Description	A description of the evidence considered when producing these assessment results.	Either Description or PortfolioReference is required. Both may be present.	0 or more	NonNullLanguage StringType For more information, see [Common]
PortfolioReference	PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry considered when producing these assessment results. There may be multiple PortfolioReference elements to point to multiple portfolio entries considered in this assessment. For information on the structure of PortfolioReference, see section PortfolioReference.	Either Description or PortfolioReference is required. Both may be present.	0 or more	Container

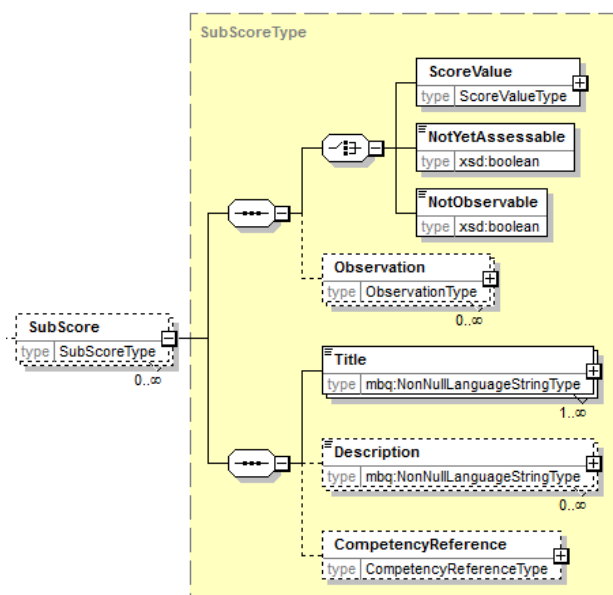
Example:

```
<ea:Evidence>
  <ea:Description>Scores were determined by reviewing assessment results, supervisor ratings and
  notes, and a competency-based portfolio.</ea:Description>
  <ea:PortfolioReference>
    <ea:URIReference>http://www.utoronto.edu/jdoel/portfolio</ea:URIReference>
  </ea:PortfolioReference>
</ea:Evidence>
```

8.3.8 SubScore

SubScore contains subelements that describe a subscore in detail. Several different types of subscores may be represented, including descriptive scores (e.g. proficient) and performance levels or milestones.

SubScoreType extends ScoreType.



SubScore Element Information

Element	Description	Required	Multiplicity	Data type
SubScore	SubScore contains subelements that describe a subscore in detail.	Optional	0 or more	Container
ScoreValue	ScoreValue contains subelements for describing the overall score on this assessment in detail.	Either ScoreValue or NotYetAssessable is required.	0 or 1	Container
NotYetAssessable	Indicates if the learner is not yet assessable in this area. Valid values are true, false.	Either ScoreValue or NotYetAssessable is required.	0 or 1	Boolean

Element	Description	Required	Multiplicity	Data type
NotObservable	Indicates if the assessment could not be performed because the learner did not demonstrate the behavior for the observer in an observation-based assessment. Valid values are true, false.	Either ScoreValue, NotYetAssessable, or NotObservable is required.	0 or 1	Boolean
Observation	Contains details about an observation contributing to the score.	Optional	0 or more	Container
Title	A title for the subscore. For example, Clinical skills.	Required	1	NonNullLanguageStringType For more information, see [Common]
Description	A description of what the subscore is for.	Optional	0 or 1	NonNullLanguageStringType For more information, see [Common]
CompetencyObjectReference	A reference to the unique id for a learning objective, competency, learning outcome, (all of which are known as competency objects) associated with this event. CompetencyObjectReference has the following format: /EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry='X'] All in one line, where X is the id of a Competency Object in this achievement record.	Optional	0 or 1	Restricted (to conformant XPath) See section Identifying Data through XPath for more information

Example:

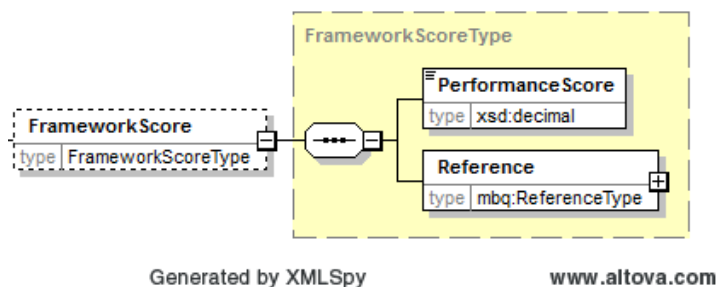
```

<ea:SubScore>
  <ea:ScoreValue>
    <LocalValue>2</LocalValue>
    <ea:FrameworkScore>
      <ea:PerformanceScore>2</ea:PerformanceScore>
      <ea:CompetencyObjectReference>
/EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry=' http://royalcollege.ca/canmeds/R1 ' ]
      </ea:CompetencyObjectReference>
      <ea:PerformanceFrameworkReference>
/EducationalAchievement/AchievementInContext/PerformanceFrameworks/PerformanceFramework[@='p1 ' ]
      </ea:PerformanceFrameworkReference>
    </ea:FrameworkScore>
  </ea:ScoreValue>
  <ea:Title>Medical Expert</ea:Title>
  <ea:Description>A score summarizing the learner's performance as a medical expert across the curriculum</ea:Description>
</ea:SubScore>

```

8.3.9 FrameworkScore

FrameworkScore contains subelements that describe the learner’s score in relation to a performance framework.



FrameworkScore Element Information

Element	Description	Required	Multiplicity	Data type
---------	-------------	----------	--------------	-----------

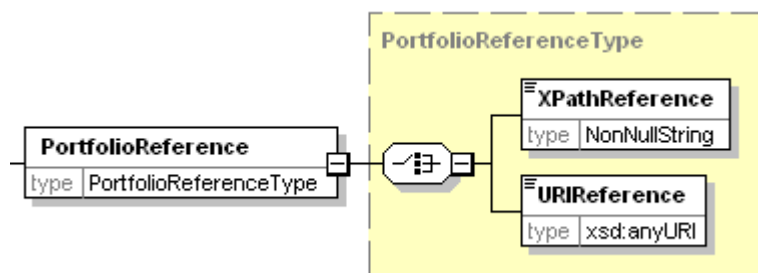
Element	Description	Required	Multiplicity	Data type
FrameworkScore	FrameworkScore contains subelements that describe the learner's score in relation to a performance framework.	Optional	0 or 1	Container
Reference	A reference to the performance framework used for determining the performance score. The Reference element uses the ReferenceType data type from the MedBiquitous Common Specifications.	Required	1	Container For more information, see [Common].
PerformanceScore	A score on a scale defined within a performance framework. The score maybe the result of a single assessment or a summary score for multiple assessments.	Either NotYetAssessable or PerformanceScore is required	0 or 1	Decimal

Example:

```
<ea:FrameworkScore>
  <ea:PerformanceScore>2</ea:PerformanceScore>
  <ea:CompetencyObjectReference>
/EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry=' http://royalcollege.ca/canmeds/R1 ' ]
  </ea:CompetencyObjectReference>
  <ea:PerformanceFrameworkReference>
/EducationalAchievement/AchievementInContext/PerformanceFrameworks/PerformanceFramework[@='p1 ' ]
  </ea:PerformanceFrameworkReference>
</ea:FrameworkScore>
```

8.3.10 PortfolioReference

PortfolioReference contains subelements that provide an XPath or URI pointer to supporting information or evidence. The URI reference is used to point to an external portfolio. The XPath reference is used to point to the portfolio section of this Educational Achievement data set.



PortfolioReference Element Information

Element	Description	Required	Multiplicity	Data type
PortfolioReference	PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry providing supporting information.	See one of the following parent elements for details on optionality: AssessmentResults EntrustmentEvidence Event Evidence SequenceBlock	0 or more	Container
XPathReference	A pointer to a portfolio entry in this EducationalAchievement data set providing supporting information. PortfolioReference has the following format: <code>/EducationalAchievement/AchievementInContext/Portfolio/pathtoentry</code> All in one line, where <i>pathtoentry</i> provides the path to the specific portfolio entry. See section Identifying Data through XPath for more information	Either XPathReference or URIReference is required.	0 or 1	NonNull StringType For more information, see [Common]

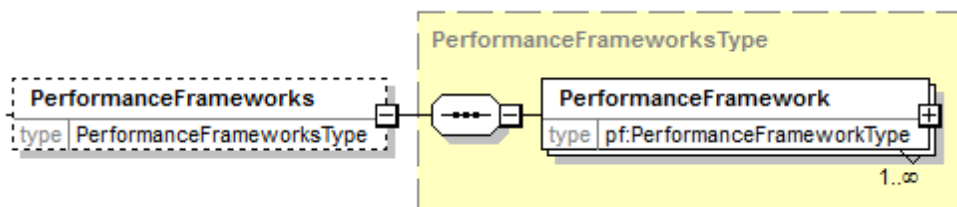
Element	Description	Required	Multiplicity	Data type
URIReference	A pointer to an external portfolio entry or supporting evidence providing related information.	Either XPathReference or URIReference is required.	0 or 1	anyURI

Example:

```
<ea:PortfolioReference>
  <ea:URIReference>http://portfolio.umaryland.edu/jdoel/sdgh</ea:URIReference>
</ea:PortfolioReference>
```

8.4 Performance Frameworks

PerformanceFrameworks contains subelements that describe sets of performance levels, entrustment levels, and related criteria. Performance levels may be associated with competency frameworks.



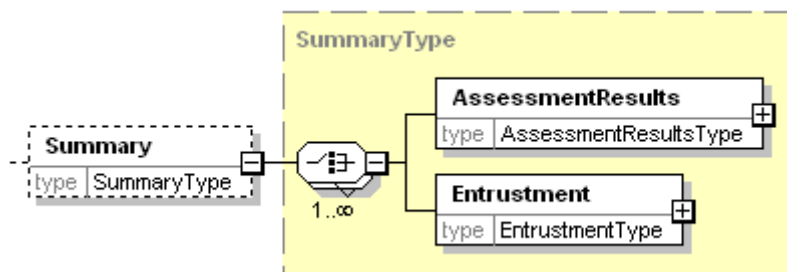
PerformanceFrameworks Element Information

Element	Description	Required	Multiplicity	Data type
PerformanceFrameworks	PerformanceFrameworks contains subelements that describe sets of performance levels, entrustment levels, and related criteria. Performance levels may be associated with competency frameworks.	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
PerformanceFramework	A set of performance levels or entrustment levels and related criteria. PerformanceFramework uses the PerformanceFramework data type from the MedBiquitous Performance Framework specification [Performance Framework].	Required	1 or more	Container For more information, see MedBiquitous Performance Framework Specification.

8.5 Summary

Summary contains subelements that describe the learner’s performance across the curriculum.



Summary Element Information

Element	Description	Required	Multiplicity	Data type
Summary	Summary contains subelements that describe the learner’s performance across the curriculum.	Optional	0 or 1	Container
Assessment Results	AssessmentResults describes a summary score or scores reflecting the learner’s performance across the curriculum. For more information, see section AssessmentResults.	Either AssessmentResults or Entrustment is required	0 or more	Container (uses the SubScore data type)

Element	Description	Required	Multiplicity	Data type
Entrustment	Entrustment describes a decision to entrust the learner to perform certain activities without supervision. For more information, see section Entrustment.	Either AssessmentResults or Entrustment is required	0 or more	Container

Example:

```

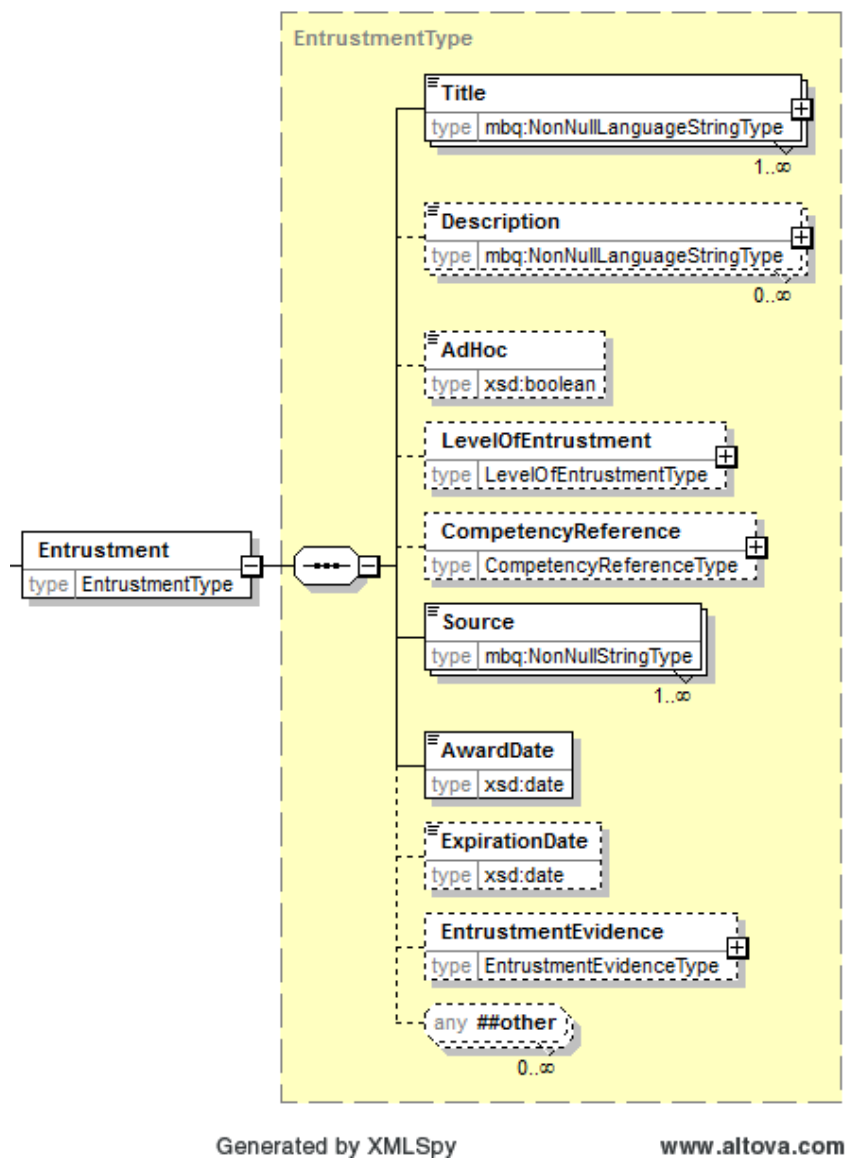
<ea:Summary>
  <ea:AssessmentResults>
    . . .
  </ea:AssessmentResults>
  <ea:Entrustment>
    . . .

  </ea:Entrustment>
  <ea:Entrustment>
    . . .
  </ea:Entrustment>
  <ea:Entrustment>
    . . .
  </ea:Entrustment>
</ea:Summary>

```

8.5.1 Entrustment

Entrustment describes a decision to entrust the learner to perform certain activities without supervision. It is based on ten Cate's notions of Statements of Awarded responsibility and Entrustable Professional Activities [[ten Cate1](#)].



Entrustment Element Information

Element	Description	Required	Multiplicity	Data type
Entrustment	Entrustment describes a decision to entrust the learner to perform certain activities without supervision.	Either AssessmentResults or Entrusment is required	0 or more	Container
Title	A title for this entrustment decision.	Required	1	NonNullLanguageStringType For more information, see [Common]
Description	A description of this entrustment decision.	Optional	0 or 1	NonNullLanguageStringType For more information, see [Common]
AdHoc	An indicator as to whether or not the entrustment decision was ad hoc, ie, made to address specific circumstances. The default value of AdHoc is false.	Optional	0 or 1	Boolean
LevelOfEntrustment	The level at which the learner has been entrusted. See section LevelOfEntrustment for more information.	Optional	0 or 1	Container
CompetencyReference	CompetencyReference contains subelements that reference a competency associated with this entrusment decision. For more information, see section CompetencyReference.	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
Source	The source of the entrustment decision. This could be an individual, a committee, or a URI to a resource that describes the decision maker in more detail.	Required	1 or more	NonNull StringType For more information, see [Common]
AwardDate	The date entrustment was awarded to the learner.	Required	1	Date
ExpirationDate	The date this entrustment decision expires.	Optional	0 or 1	Date
EntrustmentEvidence	EntrustmentEvidence contains subelements identifying the evidence weighed in making this entrustment decision. For more information, see section EntrustmentEvidence.	Optional	0 or 1	Container
Elements from other namespaces	Entrustment may include elements from other namespaces provided those elements are namespace qualified.	Optional	0 or 1	Any

Example:

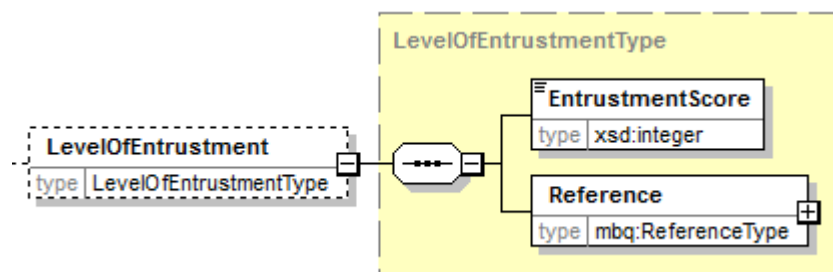
```

<ea:Entrustment>
  <ea:Title>Care of a Healthy Newborn</ea:Title>
  <ea:CompetencyObjectReference>
    /EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry=' http://abp.org/epas/epa1']
  </ea:CompetencyObjectReference>
  <ea:Source>Thelonius Smith</ea:Source>
  <ea:AwardDate>2011-08-18</ea:AwardDate>
</ea:Entrustment>

```

8.5.2 LevelOfEntrusment

LevelOfEntrusment defines the level at which the learner has been entrusted to perform a professional activity.



LevelOfEntrusment Element Information

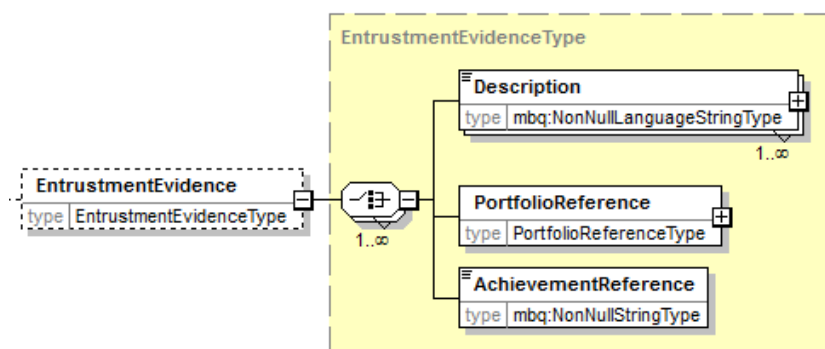
Element	Description	Required	Multiplicity	Data type
LevelOfEntrusment	The level at which the learner has been entrusted.	Optional	0 or 1	Container
EntrustmentScore	A score corresponding to the level of entrustment awarded.	Required	1	integer
Reference	A reference to an entrustment scale in an external document. The entrustment scale may be represented as a performance framework. The Reference element uses the ReferenceType data type from the MedBiquitous Common Specifications.	Required	0 or 1	Container For more information, see [Common] .

Example:

TBD

8.5.3 EntrustmentEvidence

EntrustmentEvidence identifying the evidence weighed in making this entrustment decision.



EntrustmentEvidence Element Information

Element	Description	Required	Multiplicity	Data type
EntrustmentEvidence	EntrustmentEvidence contains subelements identifying the evidence weighed in making this entrustment decision.	Optional	0 or 1	Container
Description	A description of this entrustment decision.	At least one of the following elements is required: Description, PortfolioReference, AchievementReference.	0 or more	NonNullLanguageStringType For more information, see [Common]
PortfolioReference	PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry used as evidence in this entrustment decision. There may be multiple PortfolioReference elements to point to multiple pieces of evidence considered in this decision. For information on the structure of PortfolioReference, see section PortfolioReference.	At least one of the following elements is required: Description, PortfolioReference, AchievementReference	0 or more	Container

Element	Description	Required	Multiplicity	Data type
AchievementReference	<p>A pointer to an entry (Event, SequenceBlock, or Summary Score) in this EducationalAchievement data set. AchievementReference has the following format:</p> <p><i>/EducationalAchievement/AchievementInContext/pathtoentry</i></p> <p>All in one line, where <i>pathtoentry</i> provides the path to the specific educational achievement entry.</p> <p>See section Identifying Data through XPath for more information.</p>	At least one of the following elements is required: Description, PortfolioReference, AchievementReference	0 or more	NonNull StringType For more information, see [Common]

Example:

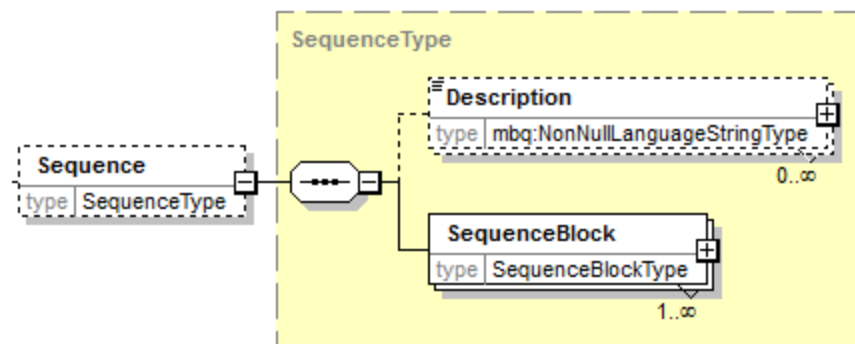
```

<ea:EntrustmentEvidence>
  <ea:Description>The committee reviewed simulation results, OSCE scores, and supervisor
ratings.</ea:Description>
  <ea:AchievementReference>/EducationalAchievement/AchievementInContext/Events/Event[@id='mde1']
</ea:AchievementReference>
  <ea:AchievementReference>/EducationalAchievement/AchievementInContext/Events/Event[@id='mde2']
</ea:AchievementReference>
</ea:EntrustmentEvidence>

```

8.6 Sequence

Sequence contains subelements that describe information about how the learner's curriculum of study is organized over a period of time. The curriculum's sequence consists of a series of sequence blocks, which correspond to courses or other blocks of curricular content.



Sequence Element Information

Element	Description	Required	Multiplicity	Data type
Sequence	Sequence contains subelements that describe information about how the learner’s curriculum of study is organized over a period of time.	Optional	0 or 1	Container
Description	A description of the overall sequence of the curriculum.	Optional	0 or more	NonNullLanguageStringType For more information, see [Common]
SequenceBlock	Contains subelements that define an organizational component of the curriculum, such as a year, phase, course module, etc. See section SequenceBlock for more information.	Required	1 or more	Container

Example:

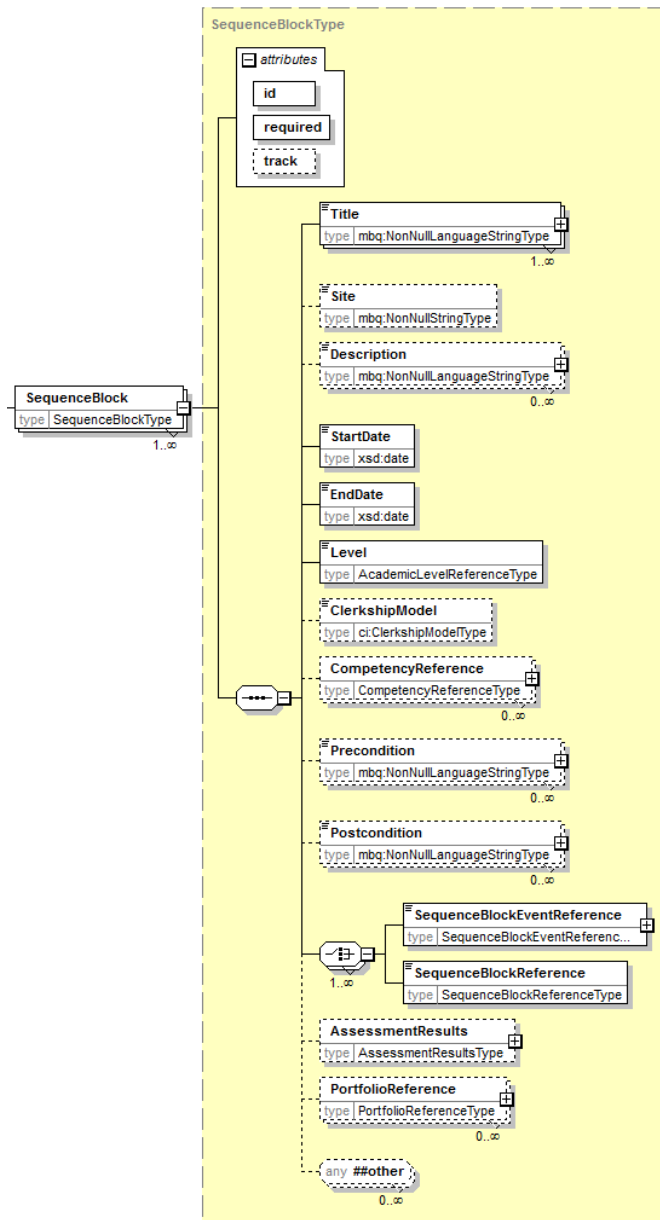
```

<Sequence>
  <Description>There are 2 years of preclinical work followed by 2 years of clinical work.</Description>
  <SequenceBlock required="true" id="asdfg">
    . . .
  
```

```
</SequenceBlock>  
<SequenceBlock required="true" id="sdfgh">  
  . . .  
</SequenceBlock>  
</Sequence>
```

8.6.1 SequenceBlock

SequenceBlock is a subelement of Sequence that contains subelements that define an organizational component of the curriculum, such as a year, phase, course, or module. Sequence blocks can be nested to show a variety of organizational methods.



SequenceBlock Element Information

Element	Description	Required	Multiplicity	Data type
SequenceBlock	<p>SequenceBlock contains subelements that define an organizational component of the curriculum, such as a year, phase, course, module, etc.</p> <p>SequenceBlock has the following attributes:</p> <p><i>id</i> A unique identifier for this sequence block. Use of the id attribute is required.</p> <p><i>required</i> Indicates whether this sequence block is a required part of the curriculum. Valid values are Required, Optional, and Required In Track. Use of the required attribute is required.</p> <p><i>track</i> Indicates whether this sequence block is a track within the curriculum. Valid values are true and false; the default value is false.</p>	Required	1	Container
Title	The title of the sequence block.	Required	1 or more	NonNull Language StringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
Site	The site where the sequence block occurred.	Optional	0 or 1	NonNull StringType For more information, see [Common]
Description	A description of the sequence block.	Optional	0 or more	NonNull Language StringType For more information, see [Common]
StartDate	The date the sequence block began.	Required	1	Date
EndDate	The date the sequence block ended.	Required	1	Date
Level	<p>Level indicates the educational level at which this sequence block occurs. For schools using academic years as the basis for progress through the curriculum, level corresponds to the academic year in which the sequence block occurs. Level has the following format:</p> <pre>/EducationalAchievement/AchievementInContext/AcademicLevels/Level[@number='X']</pre> <p>All in one line, where X is the number 1 through 10 corresponding to an academic level defined for this curriculum.</p>	Required	1	Restricted (to conformant XPath) See section Identifying Data through XPath for more information

Element	Description	Required	Multiplicity	Data type
ClerkshipModel	If the sequence block represents a clerkship, clerkship model may be used to indicate the type of clerkship. Valid values are: integrated, rotation.	Optional	0 or 1	Restricted See Description for details.
CompetencyObjectReference	A reference to the unique id for a learning objective, competency, learning outcome, (all of which are known as competency objects) associated with this event. CompetencyObjectReference has the following format: /EducationalAchievement/AchievementInContext/Expectations/CompetencyObject [lom:lom/lom:general/lom:identifier/lom:entry='X'] All in one line, where X is the id of a Competency Object in this Curriculum Inventory.	Optional	0 or more	Restricted (to conformant XPath) See section Identifying Data through XPath for more information
Precondition	Describes preconditions that the learner met to take this course.	Optional	0 or more	NonNull Language StringType For more information, see [Common]
Postcondition	Describes how the curriculum changes depending on the learner's performance in the sequence block.	Optional	0 or more	NonNull Language StringType For more information, see [Common]

Element	Description	Required	Multiplicity	Data type
SequenceBlockEventReference	<p>A reference to an education or assessment event included in the sequence block. SequenceBlockEventReference has the following format:</p> <pre>/EducationalAchievement/AchievementInContext/Events/Event[@id = 'x']</pre> <p>All in one line, where X is the id of an event in this curriculum.</p> <p>SequenceBlockEventReference has the following attribute:</p> <p><i>required</i></p> <p>Indicates whether this event is a required part of the sequence block. The required attribute uses the Boolean data type; valid values are true and false. Use of the required attribute is required.</p>	<p>Either SequenceBlockEventReference or SequenceBlockReference is required</p>	0 or more	<p>Restricted (to conformant XPath)</p> <p>See section Identifying Data through XPath for more information</p>
SequenceBlockReference	<p>A reference to a nested sequence block. SequenceBlockReference has the following format:</p> <pre>/EducationalAchievement/AchievementInContext/Sequence/SequenceBlock[@id='X']</pre> <p>All in one line, where X is the id of a sequence block in this curriculum.</p>	<p>Either SequenceBlockEventReference or SequenceBlockReference is required</p>	0 or more	<p>Restricted (to conformant XPath)</p> <p>See section Identifying Data through XPath for more information</p>
AssessmentResults	<p>AssessmentResults contains subelements that provide detailed information on the results of any assessment included in this sequence block.</p> <p>For more information, see section AssessmentResults.</p>	Optional	0 or 1	Container

Element	Description	Required	Multiplicity	Data type
PortfolioReference	PortfolioReference provides either an XPath reference or a URI reference to a portfolio entry providing supporting information related to this sequence block. There may be multiple PortfolioReference elements to point to multiple portfolio entries related to this sequence block. See section PortfolioReference for more information.	Optional	0 or more	Container
Elements from other namespaces	SequenceBlock may include elements from other namespaces provided those elements are namespace qualified.	Optional	0 or 1	Any

Example:

```

<ea:SequenceBlock id="mds4" required="Required">
  <ea:Title>Infant and Toddler Rotation</ea:Title>
  <ea:StartDate>2012-01-15</ea:StartDate>
  <ea:EndDate>2012-03-15</ea:EndDate>
  <ea:Level>/EducationalAchievement/AchievementInContext/AcademicLevels/Level[@number='3']</ea:Level>
  <ea:SequenceBlockEventReference required="true">
    /EducationalAchievement/AchievementInContext/Events/Event[@id='mdex']
  </ea:SequenceBlockEventReference>
  <ea:AssessmentResults>
    <ea:SubScore>
      <ea:FrameworkScore>
        <ea:PerformanceScore>3</ea:PerformanceScore>
        <ea:PerformanceFrameworkReference>
          /EducationalAchievement/AchievementInContext/PerformanceFramework[@id='x']
        </ea:PerformanceFrameworkReference>
      </ea:FrameworkScore>
      <ea:Title>
        Manage patients with common, single system diagnoses who require a hospital setting,
        Observation
      </ea:Title>
    </ea:SubScore>
  </ea:AssessmentResults>
</ea:SequenceBlock>

```

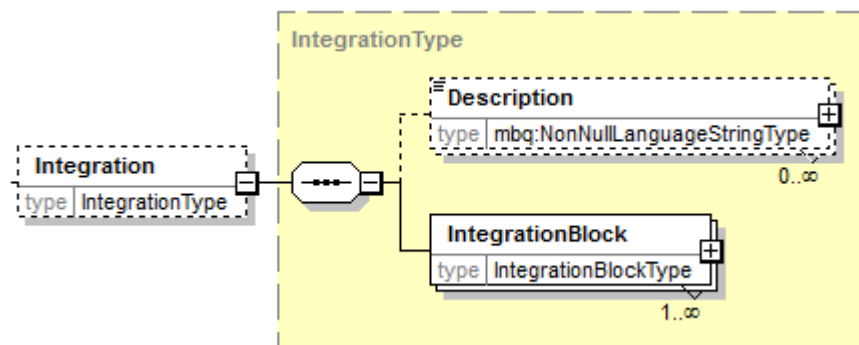
```

    <ea:CompetencyObjectReference>
      /EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:identifier/lom:entry=' http://acgme.org/competencies/epa2' ]
    </ea:CompetencyObjectReference>
  </ea:SubScore>
  <ea>Date>2012-03-01</ea>Date>
</ea:AssessmentResults>
</ea:SequenceBlock>

```

8.7 Integration

Integration contains subelements that describe how a curriculum is integrated. In many cases curricula are structured around organ systems or other organizing concepts, and within that context, content related to a specific topic, discipline, or theme is incorporated. For example, a course on the cardiovascular system may contain content related to themes of anatomy, pharmacology, etc.



Integration Element Information

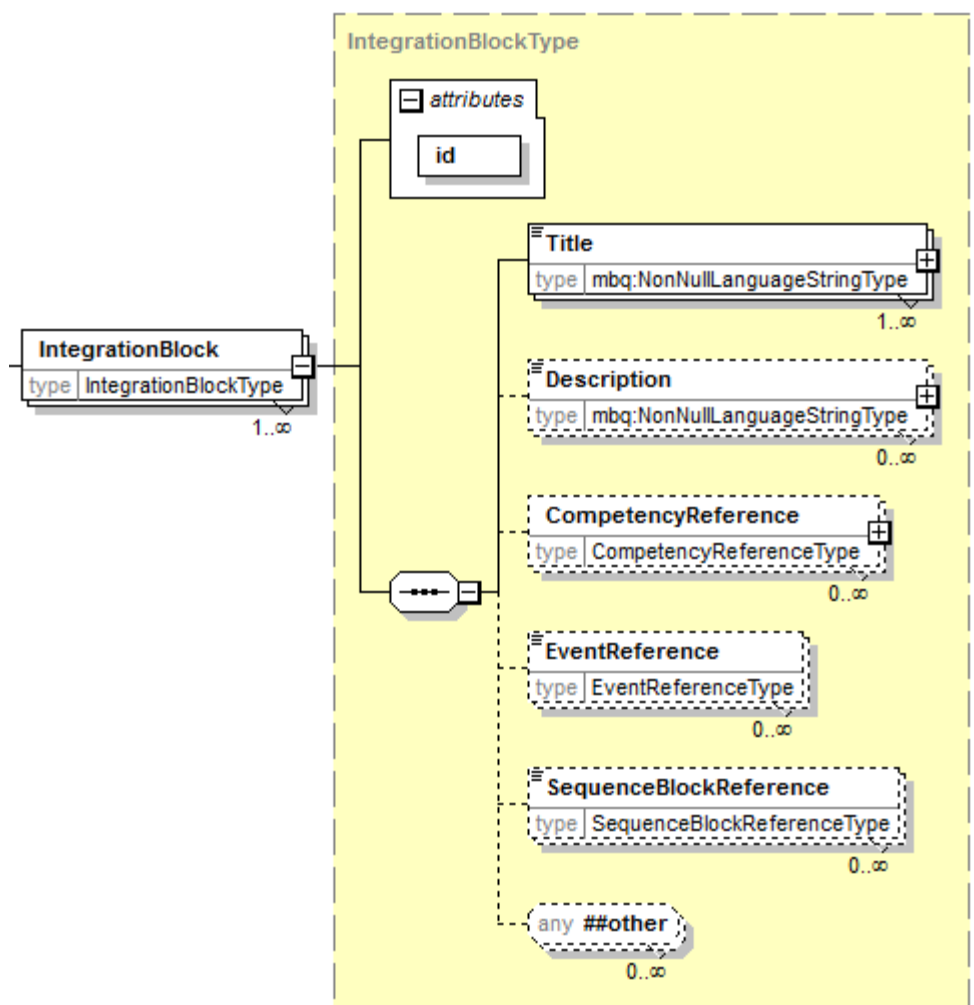
Element	Description	Required	Multiplicity	Data type
Integration	Integration contains subelements that describe how a curriculum is integrated.	Optional	1	Container
Description	A description of the approach to integrating the curriculum.	Optional	0 or more	NonNullLanguageStringType For more information, see [Common]
IntegrationBlock	Contains subelements that define an integrating concept for this curriculum, such as a theme. See section IntegrationBlock for more information.	Required	1 or more	Container

Example:

```
<Integration>
  <Description>We have themes woven throughout the curriculum</Description>
  <IntegrationBlock id="8765">
    .
  </IntegrationBlock>
  <IntegrationBlock id="7654">
    .
  </IntegrationBlock>
</Integration>
```

8.7.1 Integration Block

IntegrationBlock contains subelements that define an integrating concept for this curriculum. Many curricula have several integrating concepts, or themes, that apply to many courses, competencies, objectives, and events.



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IntegrationBlock Element Information

Element	Description	Required	Multiplicity	Data type
IntegrationBlock	<p>Contains subelements that define an integrating concept for this curriculum, such as a theme. IntegrationBlock has the following attribute:</p> <p><i>id</i> A unique identifier for this integration block. Use of the id attribute is required.</p>	Required	1 or more	Container
Title	The title of the integration block. For example, Rural Health.	Required	1 or more	NonNullLanguageStringType For more information, see [Common]
Description	A description of the integrating concept.	Optional	0 or more	NonNullLanguageStringType For more information, see [Common]
CompetencyObjectReference	<p>A reference to the unique id for a learning objective, competency, learning outcome, (all of which are known as competency objects) associated with this integration block.</p> <p>CompetencyObjectReference has the following format:</p> <pre>/EducationalAchievement/AchievementInContext /Expectations/CompetencyObject [lom:lom/lom:general/lom:identifier/lom:entry='X']</pre> <p>All in one line, where X is the id of a Competency Object in this curriculum.</p>	Optional	0 or more	Restricted (to conformant XPath) See section Identifying Data through XPath for more information
EventReference	A reference to an event associated with this integration block.	Optional	0 or more	Restricted (to

	<p>EventReference has the following format:</p> <pre>/EducationalAchievement/AchievementInContext /Events/Event[@id='X']</pre> <p>All in one line, where <i>X</i> is the id of an event in this curriculum.</p>			<p>conformant XPath)</p> <p>See section Identifying Data through XPath for more information</p>
SequenceBlockReference	<p>A reference to a sequence block associated with this integration block. SequenceBlockReference has the following format:</p> <pre>/EducationalAchievement/AchievementInContext /Sequence/SequenceBlock[@id='X']</pre> <p>All in one line, where <i>X</i> is the id of an event in this curriculum.</p>	Optional	0 or more	<p>Restricted (to conformant XPath)</p> <p>See section Identifying Data through XPath for more information</p>

Example:

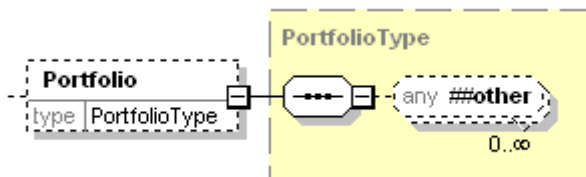
```
<ea:IntegrationBlock id="text">
  <ea:Title>a</ea:Title>
  <ea:Description>a</ea:Description>
  <ea:CompetencyObjectReference>
/EducationalAchievement/AchievementInContext/Expectations/CompetencyObject[lom:lom/lom:general/lom:ident
ifier/lom:entry=' ']
  </ea:CompetencyObjectReference>
  <ea:EventReference>
/EducationalAchievement/AchievementInContext/Events/Event[@id='mde1']
  </ea:EventReference>
  <ea:EventReference>
/EducationalAchievement/AchievementInContext/Events/Event[@id='mde3']
  </ea:EventReference>
```

```

<ea:SequenceBlockReference>
  /EducationalAchievement/AchievementInContext/Sequence/SequenceBlock[@id='mds1']
</ea:SequenceBlockReference>
<ea:SequenceBlockReference>
  /EducationalAchievement/AchievementInContext/Sequence/SequenceBlock[@id='mds4']
</ea:SequenceBlockReference>
<ea:SequenceBlockReference>
  /EducationalAchievement/AchievementInContext/Sequence/SequenceBlock[@id='mds6']
</ea:SequenceBlockReference>
. . .
</ea:IntegrationBlock>
    
```

8.8 Portfolio

Portfolio includes the learner’s educational trajectory and other portfolio data related to this record of achievement. Portfolio may contain any elements from other namespaces provided those elements are namespace qualified.



9 Sample XML Document

```

<?xml version="1.0" encoding="UTF-8"?>
<!--Sample XML file generated by XMLSpy v2012 rel. 2 sp1
(http://www.altova.com)-->
<ea:EducationalAchievement
xsi:schemaLocation="http://ns.medbiq.org/educationalachievement/v1/
educationalachievement.xsd"
xmlns:ea="http://ns.medbiq.org/educationalachievement/v1/"
xmlns:lom="http://ltsc.ieee.org/xsd/LOM"
xmlns:a="http://ns.medbiq.org/address/v1/"
xmlns:cf="http://ns.medbiq.org/competencyframework/v1/"
xmlns:co="http://ns.medbiq.org/competencyobject/v1/"
xmlns:ci="http://ns.medbiq.org/curriculuminventory/v1/"
xmlns:m="http://ns.medbiq.org/member/v1/"
xmlns:n="http://ns.medbiq.org/name/v1/"
xmlns:AcRec="urn:org:pesc:sector:AcademicRecord:v1.6.0"
xmlns:pesc="urn:org:pesc:core:CoreMain:v1.7.0"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:dcterms="http://purl.org/dc/terms/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <!--modified May 12, 2016-->
  <ea:Date>2012-05-31</ea:Date>
  <ea:Learner>
    <m:UniqueID domain="idd:aamc.org:student">123456</m:UniqueID>
    <m:Name>
      <n:GivenName>John</n:GivenName>
      <n:FamilyName>Doe</n:FamilyName>
      <n:Degree>MD</n:Degree>
    </m:Name>
    <m:EducationInfo>
      <m:Degree>MD</m:Degree>
      <m:InstitutionInfo>
        <m:InstitutionName>University of Toronto Faculty of
Medicine</m:InstitutionName>
        <m:InstitutionID
domain="idd:ecfmg.org:imed">123456</m:InstitutionID>
        </m:InstitutionInfo>
        <m:EducationStatus>Graduated</m:EducationStatus>
        <m:StartDate>2005-06-01</m:StartDate>
        <m:EndDate>2009-05-13</m:EndDate>
        <m:GraduationDate>2009-05-13</m:GraduationDate>
      </m:EducationInfo>
      <m:TrainingInfo>
        <m:ProgramInfo>
          <m:ProgramName type="Residency">University of Maryland
Pediatric Residency Program</m:ProgramName>

```



```

        <m:ProgramID
domain="idd:aamc.org:residencies">123456</m:ProgramID>
        <m:Accreditation>ACGME</m:Accreditation>
        <m:Specialty>Pediatrics</m:Specialty>
        <m:InstitutionInfo>
            <m:InstitutionName>University of Maryland School of
Medicine</m:InstitutionName>
            <m:InstitutionID
domain="idd:ecfmg.org:imed">123456</m:InstitutionID>
            </m:InstitutionInfo>
        </m:ProgramInfo>
        <m:TrainingStatus>year 2</m:TrainingStatus>
        <m:StartDate>2009-06-01</m:StartDate>
    </m:TrainingInfo>
    <m:PersonalInfo>
        <m:Gender>Male</m:Gender>
        <m:EmailAddress>john.doe@example.org</m:EmailAddress>
    </m:PersonalInfo>
</ea:Learner>
<ea:AchievementInContext>
    <ea:Source>University of Toronto</ea:Source>
    <ea:ReportID domain="idd:utoronto.ca:reports">123456</ea:ReportID>
    <ea:Institution>
        <m:InstitutionName>University of Toronto Faculty of
Medicine</m:InstitutionName>
        <m:InstitutionID
domain="idd:ecfmg.org:imed">123456</m:InstitutionID>
    </ea:Institution>
    <ea:Program>
        <ci:ProgramName>MD program</ci:ProgramName>
        <ci:ProgramID domain="idd:aamc.org:program">123456</ci:ProgramID>
        <ci:EducationalContext>undergraduate professional
education</ci:EducationalContext>
        <ci:Profession>physician</ci:Profession>
    </ea:Program>
    <ea:ReportDate>2011-10-05</ea:ReportDate>
    <ea:ReportingStartDate>2005-06-01</ea:ReportingStartDate>
    <ea:ReportingEndDate>2009-05-13</ea:ReportingEndDate>
    <ea:Language>en-us</ea:Language>
    <ea:Events>
        <ea:Event id="e1">
            <ea:Title>History Taking</ea:Title>
            <ea:EventDuration>PT4H</ea:EventDuration>
            <ea:Description>Practical experience history
taking</ea:Description>
            <ea:InstructionalMethod primary="true">Clinical Experience -
Ambulatory</ea:InstructionalMethod>
        </ea:Event>
    </ea:Events>

```

```

    <ea:Expectations>
      <ci:CompetencyObject>
        <lom:lom>
          <lom:general uniqueElementName="general">
            <lom:identifier>
              <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

          </lom:general>
        </lom:lom>
        <lom:entry>http://royalcollege.ca/canmeds/R1</lom:entry>
          </lom:identifier>
          <lom:title>
            <lom:string>Medical Expert</lom:string>
          </lom:title>
        </lom:general>
      </ci:CompetencyObject>
      <co:Status>Active</co:Status>
    </ci:CompetencyObject>
    <ci:CompetencyObject>
      <lom:lom>
        <lom:general uniqueElementName="general">
          <lom:identifier>
            <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

          </lom:general>
        </lom:lom>
        <lom:entry>http://royalcollege.ca/canmeds/R2</lom:entry>
          </lom:identifier>
          <lom:title>
            <lom:string>Professional</lom:string>
          </lom:title>
        </lom:general>
      </ci:CompetencyObject>
      <co:Status>Active</co:Status>
    </ci:CompetencyObject>
    <ci:CompetencyObject>
      <lom:lom>
        <lom:general uniqueElementName="general">
          <lom:identifier>
            <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

          </lom:general>
        </lom:lom>
        <lom:entry>http://royalcollege.ca/canmeds/R3</lom:entry>
          </lom:identifier>
          <lom:title>
            <lom:string>Communicator</lom:string>
          </lom:title>
          <lom:description>
            <lom:string>As Communicators, physicians effectively
facilitate the doctor-patient relationship and the dynamic exchanges that
occur before, during, and after the medical encounter.

```

```

</lom:string>
    </lom:description>
  </lom:general>
</lom:lom>
  <co:Status>Active</co:Status>
</ci:CompetencyObject>
<ci:CompetencyObject>
  <lom:lom>
    <lom:general uniqueElementName="general">
      <lom:identifier>
        <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

    <lom:entry>http://royalcollege.ca/canmeds/</lom:entry>
      </lom:identifier>
      <lom:title>
        <lom:string>Collaborator</lom:string>
      </lom:title>
    </lom:general>
  </lom:lom>
  <co:Status>Active</co:Status>
</ci:CompetencyObject>
<ci:CompetencyObject>
  <lom:lom>
    <lom:general uniqueElementName="general">
      <lom:identifier>
        <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

    <lom:entry>http://royalcollege.ca/canmeds/R5</lom:entry>
      </lom:identifier>
      <lom:title>
        <lom:string>Manager</lom:string>
      </lom:title>
    </lom:general>
  </lom:lom>
  <co:Status>Active</co:Status>
</ci:CompetencyObject>
<ci:CompetencyObject>
  <lom:lom>
    <lom:general uniqueElementName="general">
      <lom:identifier>
        <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

    <lom:entry>http://royalcollege.ca/canmeds/R6</lom:entry>
      </lom:identifier>
      <lom:title>
        <lom:string>Health Advocate</lom:string>

```

```

        </lom:title>
      </lom:general>
    </lom:lom>
    <co:Status>Active</co:Status>
  </ci:CompetencyObject>
  <ci:CompetencyObject>
    <lom:lom>
      <lom:general uniqueElementName="general">
        <lom:identifier>
          <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>

      </lom:general>
    </lom:lom>
    <lom:entry>http://royalcollege.ca/canmeds/R7</lom:entry>
      </lom:identifier>
      <lom:title>
        <lom:string>Scholar</lom:string>
      </lom:title>
    </lom:general>
  </lom:lom>
  <co:Status>Active</co:Status>
</ci:CompetencyObject>
<ci:CompetencyFramework>
  <lom:lom>
    <lom:general uniqueElementName="general">
      <lom:identifier>
        <lom:catalog
uniqueElementName="catalog">URI</lom:catalog>
        <lom:entry>http://royalcollege.ca/canmeds</lom:entry>
      </lom:identifier>
    </lom:general>
  </lom:lom>
  <cf:EffectiveDate>2005-01-01</cf:EffectiveDate>
  <cf:SupportingInformation>

    <cf:Link>http://www.royalcollege.ca/shared/documents/canmeds/the_7_cann
eds_roles_e.pdf</cf:Link>
  </cf:SupportingInformation>
  <cf:Includes>
    <cf:Catalog>URI</cf:Catalog>
    <cf:Entry>http://royalcollege.ca/canmeds/R1</cf:Entry>
  </cf:Includes>
  <cf:Includes>
    <cf:Catalog>URI</cf:Catalog>
    <cf:Entry>http://royalcollege.ca/canmeds/R2</cf:Entry>
  </cf:Includes>
  <cf:Includes>
    <cf:Catalog>URI</cf:Catalog>
    <cf:Entry>http://royalcollege.ca/canmeds/R3</cf:Entry>
  </cf:Includes>

```

```

    <cf:Includes>
      <cf:Catalog>URI</cf:Catalog>
      <cf:Entry>http://royalcollege.ca/canmeds/R4</cf:Entry>
    </cf:Includes>
    <cf:Includes>
      <cf:Catalog>URI</cf:Catalog>
      <cf:Entry>http://royalcollege.ca/canmeds/R5</cf:Entry>
    </cf:Includes>
    <cf:Includes>
      <cf:Catalog>URI</cf:Catalog>
      <cf:Entry>http://royalcollege.ca/canmeds/R6</cf:Entry>
    </cf:Includes>
    <cf:Includes>
      <cf:Catalog>URI</cf:Catalog>
      <cf:Entry>http://royalcollege.ca/canmeds/R7</cf:Entry>
    </cf:Includes>
  </ci:CompetencyFramework>
</ea:Expectations>
<ea:Summary>
  <ea:AssessmentResults>
    <ea:Evidence>
      <ea:Description>Scores were determined by reviewing
assessment results, supervisor ratings and notes, and a competency-based
portfolio.</ea:Description>
      <ea:PortfolioReference>

        <ea:URIReference>http://www.utoronto.edu/jdoel/portfolio</ea:URIReferen
ce>

      </ea:PortfolioReference>
    </ea:Evidence>
    <ea:SubScore>
      <ea:ScoreValue>
        <LocalValue>2</LocalValue>
        <ea:FrameworkScore>
          <ea:Reference>
            <rdf:description
about="http://www.example.org/performanceframework.xml#123456"/>
            <rdf:type
rdf:resource="http://ns.medbiq.org/performanceframework/v1/">
              <dcterms:format>application/xml</dcterms:format>
            </ea:Reference>
          <ea:PerformanceScore>2</ea:PerformanceScore>
        </ea:FrameworkScore>
      </ea:ScoreValue>
      <ea:Title>Medical Expert</ea:Title>
      <ea:Description>A score summarizing the learner's
performance as a medical expert across the curriculum</ea:Description>
    </ea:SubScore>
  </ea:SubScore>

```

```

        <ea:ScoreValue>
          <ea:FrameworkScore>
            <ea:Reference>
              <rdf:description
about="http://www.example.org/performanceframework.xml#234567"/>
              <rdf:type
rdf:resource="http://ns.medbiqu.org/performanceframework/v1/" />
              <dcterms:format>application/xml</dcterms:format>
            </ea:Reference>
            <ea:PerformanceScore>1.8</ea:PerformanceScore>
          </ea:FrameworkScore>
        </ea:ScoreValue>
        <ea:Title>Communicator</ea:Title>
        <ea:Description>A score summarizing the learner's
performance as a communicator across the curriculum</ea:Description>
      </ea:SubScore>
      <ea:SubScore>
        <ea:ScoreValue>
          <ea:FrameworkScore>
            <ea:Reference>
              <rdf:description
about="http://www.example.org/performanceframework.xml#345678"/>
              <rdf:type
rdf:resource="http://ns.medbiqu.org/performanceframework/v1/" />
              <dcterms:format>application/xml</dcterms:format>
            </ea:Reference>
            <ea:PerformanceScore>2.2</ea:PerformanceScore>
          </ea:FrameworkScore>
        </ea:ScoreValue>
        <ea:Title>Collaborator</ea:Title>
        <ea:Description>A score summarizing the learner's
performance as a collaborator across the curriculum</ea:Description>
      </ea:SubScore>
      <ea:Date>2009-05-31</ea:Date>
    </ea:AssessmentResults>
  </ea:Summary>
  <ea:AcademicLevels>
    <ci:LevelsInProgram>4</ci:LevelsInProgram>
    <ci:Level number="1">
      <ci:Label>Year 1</ci:Label>
      <ci:Description>The first year of study -
preclerkship.</ci:Description>
    </ci:Level>
    <ci:Level number="2">
      <ci:Label>Year 2</ci:Label>
      <ci:Description>The second year of study -
preclerkship.</ci:Description>
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    <ci:Level number="3">

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        <ci:Label>Year 3</ci:Label>
        <ci:Description>The third year of study -
clerkship.</ci:Description>
    </ci:Level>
    <ci:Level number="4">
        <ci:Label>Year 4</ci:Label>
        <ci:Description>The fourth year of study -
clerkship.</ci:Description>
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        <ea:Description>This course is organized in hospital-based
groups of 5-6 students, and will take place .5 day each week of the
academic year.</ea:Description>
        <ea:StartDate>2005-09-01</ea:StartDate>
        <ea:EndDate>2006-07-30</ea:EndDate>

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the Board of Examiners will be required to repeat the course in the
following academic year.</ea:Postcondition>
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</ea:Integration>
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        <ci:ProgramID domain="idd:acgme.org:program">98765</ci:ProgramID>
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education</ci:EducationalContext>
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        <ci:Specialty>pediatrics</ci:Specialty>
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    <ea:ReportingEndDate>2011-10-05</ea:ReportingEndDate>
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    <ea:Event id="mdl1">
      <ea>Title>Pediatric Level 3 360 Degree Feedback</ea>Title>
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        <ea:SubScore>
          <ea:ScoreValue>
            <PercentCorrectValue>70</PercentCorrectValue>
          </ea:ScoreValue>
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```

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system diagnoses who require a hospital setting.
            </lom:string>
            </lom:title>

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  <ea:AwardDate>2011-08-18</ea:AwardDate>
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        <ea:Description>The committee reviewed simulation results,
OSCE scores, and supervisor ratings.</ea:Description>

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through their training.</ea:Description>
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        <ea:EndDate>2012-06-30</ea:EndDate>

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```

        Manage patients with common, single system diagnoses who
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10 References

For references citing a specific date or edition, only the edition cited applies. For references that do not cite a specific edition, the latest edition of the referenced document (including any amendments or corrigenda) applies.

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