

Dutch Exam Profile v4.0

Extension Documents Reference

0. Table of Contents

1. Introduction	2
1.1. DEP Documentation Overview	2
1.2. Legend	2
1.3. Copyright Notice	2
2. General Information	3
2.1. Schema	3
2.2. Extensions namespace	3
3. Test Extension Documents	4
3.1. Resolution specification	4
3.2. Volume control	5
3.3. Test Structure Specification	5
4. Item Extension Documents	7
4.1. Tool Information	8
4.1.1. Calculator Information	8
4.1.2. Notepad Information	9
4.1.3. Spell Check Information	9
4.1.4. Symbol Picker Information	9
4.1.5. Formula List Information	9
4.1.6. Formula Editor Information	10
4.1.7. Ruler Information	11
4.1.8. Protractor Information	11
4.1.9. Triangle Information	11
4.1.10. Media Player Information	12
4.1.11. Text Marker Information	12
4.1.12. Reset Information	12
4.2. Window Information	12
4.3. Pop-up Information	13
4.4. Reference Information	13
4.5. Scoring Information	14
4.6. Matching elements Information	15
4.7. Math elements Information	15
4.8. Toolbox Elements Information	16
4.9. Inline Choice Rich Text Information	17
4.10. Gap Text Rich Text Information	18
4.11. Custom Interactions Extension Information	18
5. Global Types	19
5.1. Window Dimensions	19

1. Introduction

This document is part of the technical documentation set for the *Dutch Exam Profile v4.0 (DEP)*. The DEP is a generic standard for specifying and transferring exams between parts of a computer based exam system (originally developed for the Dutch computer based exam system Facet). A common introduction and an overview of the available documentation and other source of information can be found in [DEP-FO]. The main goal of this technical documentation set is to supply content and software developers with enough information to implement the DEP.

This part of the documentation set describes the *extension documents* the DEP defines for the Content Package. Extension documents contain additional metadata for QTI assessment tests and items.

A single extension document is linked to a specific QTI test or item document. This is done by DEP specific extensions in the CP manifest. More information about this in [DEP-MER].

1.1. DEP Documentation Overview

The DEP v4.0 June 2, 2015 documentation set consist of several documents. References to other documents are always in square brackets, e.g. [DEP-MER]. The following table provides an overview:

Document:	Title:
[DEP-DRG]	Dutch Exam Profile v4.0 - Documentation Reading Guide
[DEP-FO]	Dutch Exam Profile v4.0 - Functional Overview
[DEP-MER]	Dutch Exam Profile v4.0 - Manifest Extensions Reference
[DEP-EDR]	Dutch Exam Profile v4.0 - Extension Documents Reference
[DEP-QAR]	Dutch Exam Profile v4.0 - QTI Adaptations Reference

1.2. Legend

- Columns marked **Pg.** indicate on which page more information can be found about a particular element, attribute or type.
- Columns marked **#** hold information about the occurrences of the element/attribute described
- The following indicators for occurrences are used:

Indicator:	Description:
1	The element or attribute must occur exactly once (single mandatory).
?	The element or attribute can occur (single optional).
*	The element must occur one or more times (multiple mandatory).
+	The element can occur zero or more times (multiple optional).

1.3. Copyright Notice

This document contains extracts from or derivatives of the IMS Global Learning Consortium specifications listed below and are available from the IMS Global Learning Consortium at <http://www.imsglobal.org>:

- IMS Question and Test Interoperability Specification, Version 2.1

<http://www.imsglobal.org/question/>
Copyright © 2012

- IMS Content Packaging Specification, Version 1.2

<http://www.imsglobal.org/content/packaging/>
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2. General Information

2.1. Schema

- The DEP XML Schema for the extension documents is called `imsqti_ext_v2p1.xsd`.

2.2. Extensions namespace

- All extension documents are in the `http://www.imsglobal.org/xsd/imsqti_ext_v2p1` namespace.
- The proposed prefix for this namespace is `dep` (`xmlns:dep="http://www.imsglobal.org/xsd/imsqti_ext_v2p1"`).
- The `dep` prefix will be used throughout this document to refer to this namespace.
- Elements in the XML examples in this document that are shown without a namespace prefix are in this namespace.

3. Test Extension Documents

A QTI assessment test document (<assessmentTest>) in DEP CP can have an optional extension document. This document contains additional metadata necessary for processing the test according to the DEP standards.

When a test needs no additional metadata, a test extension document must be left out.

An abbreviated example of such a test extension document is:

```
<dep:depTest xmlns:dep="http://www.imsglobal.org/xsd/imsqti_ext_v2p1">
  <dep:minResolution>
    <dep:width>1024</dep:width>
    <dep:height>768</dep:height>
  </dep:minResolution>
  <dep:minColorDepth>16</dep:minColorDepth>
  <dep:soundCheck>
  <dep:testPart title="toetsdeel 1" qtiTestPartIdentifierRef="RES-eddc756-1878-4752-bc33-e5bc44a7dd1c">
    <dep:testSection qtiAssessmentSectionIdentifierRef="RES-95d6275f-01a5-4bc7-b665-a2c3a2eaf3be">
      <dep:itemRef qtiAssessmentItemRefIdentifierRef="ITM-Beginscherm_FT">
        <dep:usage>informational</dep:usage>
      </dep:itemRef>
      <!-- ... -->
    </dep:testSection>
  </dep:testPart>
</dep:depTest>
```

Root element <depTest>:

```
<depTest>
  <minResolution>?
  <minColorDepth>?
  <showRemainingTime>?
  <showResults>?
  <soundCheck>?
  <microphoneCheck>?
  <warningBeforeEndDuration>?
  <volumeControl>?
  <showMaxScore>?
  <consecutiveNumbering>?
  <testPart>*
</depTest>
```

Child element:	#	Type:	Pg.	Description:
minResolution	?	Dimensions.Type	4	Specifies the lowest required screen resolution.
minColorDepth	?	ColorDepth.Type		Specifies the minimum screen color depth. <div> <div>8</div> <div>16</div> <div>24</div> <div>32</div> </div>
showRemainingTime	?	Empty.Type		Presence of this element specifies that the remaining test time is visible to the candidate.
showResults	?	Empty.Type		Presence of this element specifies that the score should be shown after the test.
soundCheck	?	Empty.Type		Presence of this element specifies that a sound check is required.
microphoneCheck	?	Empty.Type		Presence of this element specifies that a microphone check required.
warningBeforeEndDuration	?	xs:duration		Specifies the duration before the end of the test at which a warning should be shown.
volumeControl	?	VolumeControl.Type	5	Specifies volume control settings for the test. This element is deprecated and should no longer be used.
showMaxScore	?	Empty.Type		Presence of this element specifies that the maximum score should be shown on the overview.
consecutiveNumbering	?	Empty.Type		Presence of this element specifies consecutive numbering over the assessment test's testParts. If not present, each testPart restarts the numbering.
testPart	*	DEPTestPart.Type	5	Specifies the structure of the test.

3.1. Resolution specification

This specifies the lowest required screen resolution (expressed in pixels).

Element <minResolution> (Dimensions.Type):

```
<minResolution>
  <width>
  <height>
</minResolution>
```

Child element:	#	Type:	Pg.	Description:
width	1	xs:integer		Width of the screen (in pixels).
height	1	xs:integer		Height of the screen (in pixels).

3.2. Volume control

Specifies the default level for the volume control. This element is deprecated and should no longer be used.

Element <volumeControl> (VolumeControl.Type):

```
<volumeControl>
  <defaultLevel>?
</volumeControl>
```

Child element:	#	Type:	Pg.	Description:
defaultLevel	?	xs:byte		Specifies the default volume level (0..100)

3.3. Test Structure Specification

The structure as expressed in the QTI assessment test document does not contain enough information for the DEP. For instance you cannot specify titles for parts/sections. To add the required information, the structure (at least that part that needs amending) is repeated here in the <testPart> element.

Element <testPart> (DEPTestPart.Type):

```
<testPart qtiTestPartIdentifierRef = xs:normalizedString
  title = xs:normalizedString >
  <testSection>*
</testPart>
```

Attribute:	#	Type:	Pg.	Description:
qtiTestPartIdentifierRef	1	xs:normalizedString		The identifier of the testPart in the QTI assessment test that is being extended.
title	1	xs:normalizedString		Sets the title of the testPart identified by the qtiTestPartIdentifierRef attribute.

Child element:	#	Type:	Pg.	Description:
testSection	*	DEPSection.Type		See below.

A <testSection> element specifies the extensions for a testSection within a testPart.

```
<testSection qtiAssessmentSectionIdentifierRef = xs:normalizedString >
  <itemRef>*
  <adaptiveSelection>?
  <testSection>*
</testSection>
```

Attribute:	#	Type:	Pg.	Description:
qtiAssessmentSectionIdentifierRef	1	xs:normalizedString		The identifier of the testSection in the QTI assessment test that is being extended.

Child element:	#	Type:	Pg.	Description:
itemRef	*	DEPItemRef		See below.
adaptiveSelection	?	AdaptiveSelection.Type		See below.
testSection	*	DEPSection.Type		Specification of (optional) nested subsections.

An <itemRef> element specifies the extensions for the *reference* to an item in a testSection.

```
<itemRef qtiAssessmentItemRefIdentifierRef = xs:normalizedString >
  <usage>?
</itemRef>
```

Attribute:	#	Type:	Pg.	Description:
qtiAssessmentItemRefIdentifierRef	1	xs:normalizedString		The identifier of the <i>reference</i> to the QTI assessment item (<assessmentItemRef> element, identifier attribute) in the QTI assessment test that is being extended.

Child element:	#	Type:	Pg.	Description:	
usage	?	ItemUsage.Type		Specifies how an item is used within the test.	
				default	Normal item (interaction with a score)
				seeding	Interaction with a score, but the score is not used in computing the final score. It is for psychometric information only.
				informational	Informational item only (without interaction).

An <adaptiveSelection> element links an assessment test section to an adaptive test driver. More information about this in [DEP-QAR].

```
<adaptiveSelection>
  <moduleIdRef>
  <driverIdRef>
</adaptiveSelection>
```

Child element:	#	Type:	Pg.	Description:
moduleIdRef	1	xs:normalizedString		GUID of the adaptive test module (as defined in the CP's manifest)
driverIdRef	1	xs:normalizedString		GUID of the adaptive test driver (as defined in the CP's manifest)

4. Item Extension Documents

A QTI assessment item document (<assessmentItem>) in DEP CP can have an optional extension document. This document contains additional metadata necessary for processing the item according to the DEP standards.

When an item needs no additional metadata, an item extension document must be left out.

An abbreviated example of such an item extension document is:

```
<dep:depItem xmlns:dep="http://www.imsglobal.org/xsd/imsqti_ext_v2p1">
  <dep:toolInfo>
    <dep:notepad>
      <dep:description/>
    </dep:notepad>
    <dep:symbolPicker>
      <dep:description/>
      <dep:symbols>€ëëëëïöää$±</dep:symbols>
    </dep:symbolPicker>
    <dep:textMarker>
      <dep:description/>
    </dep:textMarker>
  </dep:toolInfo>
  <dep:referenceInfo>
    <dep:dimensions>
      <dep:width>437</dep:width>
      <dep:height>520</dep:height>
    </dep:dimensions>
    <dep:display>default</dep:display>
    <dep:content>
      <dep:caption/>
      <dep:href>../ref/Bron_Likeable_Verklanking.html</dep:href>
    </dep:content>
  </dep:referenceInfo>
  <dep:scoringInfo>
    <dep:instruction qtiRubricBlockIdentifierRef="qtiScoringRubricBlock"/>
    <dep:aspect qtiOutcomeDeclarationIdentifierRef="qtiAspectInhoudOutcomeDeclaration"
      qtiRubricBlockIdentifierRef="qtiAspectInhoudRubricBlock">
      <dep:caption>Inhoud</dep:caption>
    </dep:aspect>
  </dep:scoringInfo>
</dep:depItem>
```

Root element <depItem>:

```
<depItem>
  <toolInfo>?
  <window>*
  <popupInfo>*
  <referenceInfo>?
  <scoringInfo>?
  <matchingElements>?
  <mathElements>?
  <toolboxElements>?
  <inlineChoiceRichTextInteraction>*
  <gapTextRichTextInteraction>*
  <customInteractionExtensions>?
</depItem>
```

Child element:	#	Type:	Pg.	Description:
toolInfo	?	ToolInfo.Type	8	Additional information for the tools the student can use during the exam/test.
window	*	Window.Type	12	Describes windows that can be used for pop-ups.
popupInfo	*	PopupInfo.Type	13	Describes additional pop-up information.
referenceInfo	?	ReferenceInfo.Type	13	Specification of additional reference material to be shown to the student.
scoringInfo	?	ScoringInfo.Type	14	Specifies how items that cannot be scored automatically should be treated with respect to scoring.
matchingElements	?	MatchingElements.Type	15	Information for a special interaction (sub)type that links selectable texts to text inputs.
mathElements	?	MathElements.Type	16	Specifies on which elements the formula editor must be shown.
toolboxElements	?	ToolboxElements.Type	17	Specifies on which elements the toolbox must be shown.
inlineChoiceRichTextInteraction	*	InlineChoiceRichTextInteraction.Type	17	Allows you to provide rich content (e.g. images or tables) for the choices of a QTI inline choice interactions.

Child element:	#	Type:	Pg.	Description:
gapTextRichTextInteraction	*	GapTextRichTextInteraction.Type	18	Allows you to define rich content (e.g. images or tables) for the choices of a gap match interaction.
customInteractionExtensions	?	CustomInteractionExtensions.Type	18	Defines whether a response is expected from a QTI custom interaction.

4.1. Tool Information

The `<toolInfo>` element contains additional information necessary for setting up the tools the student can use during the exam/test.

The presence of information about a tool here determines whether the delivery platform will show information about this tool in its help. So its important to mention a tool here, even when there is nothing to configure!

Element `<toolInfo>` (`ToolInfo.Type`):

```
<toolInfo>
  <calculator>?
  <notepad>?
  <spellCheck>?
  <symbolPicker>?
  <formulaList>?
  <formulaEditor>?
  <ruler>?
  <protractor>?
  <triangle>?
  <mediaPlayer>*
  <textMarker>?
  <reset>?
</toolInfo>
```

Child element:	#	Type:	Pg.	Description:
calculator	?	Calculator.Type	8	Additional information for the calculator tool.
notepad	?	Notepad.Type	9	Additional information for the notepad tool.
spellCheck	?	SpellCheck.Type	9	Additional information for the spelling checker tool.
symbolPicker	?	SymbolPicker.Type	9	Additional information for the symbol picker tool.
formulaList	?	FormulaList	10	Additional information for the formula list tool.
formulaEditor	?	FormulaEditor.Type	10	Additional information for the formula editor tool.
ruler	?	ruler.Type	11	Additional information for the ruler tool.
protractor	?	Protractor.Type	11	Additional information for the protractor tool.
triangle	?	Triangle.Type	11	Additional information for the triangle tool.
mediaPlayer	*	MediaPlayer.Type	12	Additional information for the media player tool.
textMarker	?	TextMarker.Type	12	Additional information for the text marker tool.
reset	?	Reset.Type	12	Additional information for the reset tool.

4.1.1. Calculator Information

Element `<calculator>` (`Calculator.Type`):

```
<calculator>
  <description>?
  <mode>
</calculator>
```

Child element:	#	Type:	Pg.	Description:						
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.						
mode	1	CalculatorMode.Type		<div>Defines the initial mode for the calculator. The student is always allowed to change mode.</div> <table><tr><td>minimal</td><td>Shows a minimal calculator. This value is deprecated and should no longer be used. There is no minimal type calculator</td></tr><tr><td>basic</td><td>Shows a basic calculator.</td></tr><tr><td>scientific</td><td>Shows a full scientific calculator</td></tr></table>	minimal	Shows a minimal calculator. This value is deprecated and should no longer be used. There is no minimal type calculator	basic	Shows a basic calculator.	scientific	Shows a full scientific calculator
minimal	Shows a minimal calculator. This value is deprecated and should no longer be used. There is no minimal type calculator									
basic	Shows a basic calculator.									
scientific	Shows a full scientific calculator									

Example: Here is how the basic and scientific calculators look like in Facet:



4.1.2. Notepad Information

Element `<notepad>` (`Notepad.Type`):

```
<notepad>
  <description>?
</notepad>
```

Child element:	#	Type:	Pg.	Description:
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.

4.1.3. Spell Check Information

Element `<spellCheck>` (`SpellCheck.Type`):

```
<spellCheck>
  <description>?
  <culture>
</spellCheck>
```

Child element:	#	Type:	Pg.	Description:								
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.								
culture	1	xs:normalizedString		<div>Specifies the language to spell check against. Currently allowed values are:</div> <table><tr><td>nl-NL</td><td>Dutch</td></tr><tr><td>en-US</td><td>English (United States)</td></tr><tr><td>en-UK</td><td>English (United Kingdom)</td></tr><tr><td>fr-FR</td><td>French</td></tr></table>	nl-NL	Dutch	en-US	English (United States)	en-UK	English (United Kingdom)	fr-FR	French
nl-NL	Dutch											
en-US	English (United States)											
en-UK	English (United Kingdom)											
fr-FR	French											

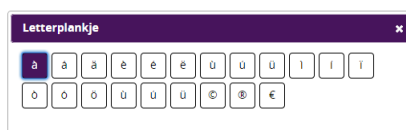
4.1.4. Symbol Picker Information

Element `<symbolPicker>` (`SymbolPicker.Type`):

```
<symbolPicker>
  <description>?
  <symbols>
</symbolPicker>
```

Child element:	#	Type:	Pg.	Description:
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.
symbols	1	xs:normalizedString		Defines the list of symbols the student can choose from. To make this work the character encoding used for the XML <i>must</i> be UTF-8. Example: <code><symbols>€ëéëëïôää\$±</symbols></code>

Here is an example of a symbol picker shown by Facet:



4.1.5. Formula List Information

The formula list enables you to present the student with a pre-defined list of formulas to choose from. These formulas can be categorized. Here is an example of a formula list with a single category (called "Formula examples"):

```

<formulaList>
  <description/>

  <menuItem>
    <menuLabel>Formula examples</menuLabel>
    <formulas>
      <formula>
        <m:math xmlns:m="http://www.w3.org/1998/Math/MathML">
          <!-- MathML formula 1 ... -->
        </m:math>
      </formula>
      <formula>
        <m:math xmlns:m="http://www.w3.org/1998/Math/MathML">
          <!-- MathML formula 2 ... -->
        </m:math>
      </formula>
    </formulas>
  </menuItem>
</formulaList>

```

To create multiple categories, repeat the `<menuItem>` element.

Element `<formulaList>` (FormulaList):

```

<formulaList>
  <description?>
  <menuItem>*</menuItem>
</formulaList>

```

Child element:	#	Type:	Pg. Description:
description	?	xs:normalizedString	Some description of the tool. For documentation purposes only.
menuItem	*	MenuItem.Type	See below.

Defines the formulas for a category in the formula list.

```

<menuItem>
  <menuLabel>
  <formulas>*</formulas>
</menuItem>

```

Child element:	#	Type:	Pg. Description:
menuLabel	1	xs:normalizedString	The name of the formula list category.
formulas	*	Formulas.Type	See below.

Defines a group of formulas within a category in the formula list.

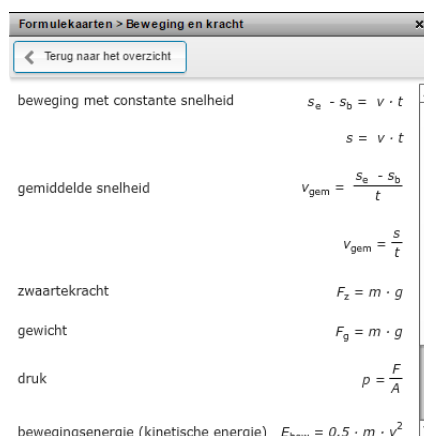
```

<formulas>
  <formulaLabel?>
  <formula>*</formula>
</formulas>

```

Child element:	#	Type:	Pg. Description:
formulaLabel	?	xs:normalizedString	The (optional) name of this group of formulas.
formula	*	Formula.Type	Specifies a formula the student can choose from. These must be specified in MathML (<code><m:math></code> element).

Here is an example of a formula list shown by Facet:



4.1.6. Formula Editor Information

Element `<formulaEditor>` (FormulaEditor.Type):

```

<formulaEditor>
  <description?>
</formulaEditor>

```

Child element:	#	Type:	Pg. Description:
description	?	xs:normalizedString	Some description of the tool. For documentation purposes only.

See also the math elements information (pg. 15).

4.1.7. Ruler Information

Element <ruler> (ruler.Type):

```
<ruler>
  <description>?
  <start>
  <end>
  <stepSize>
  <step>
  <unit>
</ruler>
```

Child element:	#	Type:	Pg. Description:
description	?	xs:normalizedString	Some description of the tool. For documentation purposes only.
start	1	xs:decimal	The start value of the ruler.
end	1	xs:decimal	The end value of the ruler.
stepSize	1	xs:integer	The size on the screen (expressed in pixels) of each step.
step	1	xs:decimal	The size of each step on the ruler.
unit	1	xs:normalizedString	The display name for the units on the ruler, e.g. mm or cm or centimeter.

Here is an example of a ruler shown by Facet:



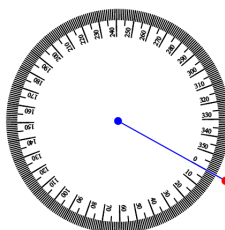
4.1.8. Protractor Information

Element <protractor> (Protractor.Type):

```
<protractor>
  <description>?
  <enableRotation>
</protractor>
```

Child element:	#	Type:	Pg. Description:
description	?	xs:normalizedString	Some description of the tool. For documentation purposes only.
enableRotation	1	xs:boolean	Whether to enable rotation for the protractor. When false the protractor has 0 on top and cannot be rotated.

Here is an example of a protractor shown by Facet:



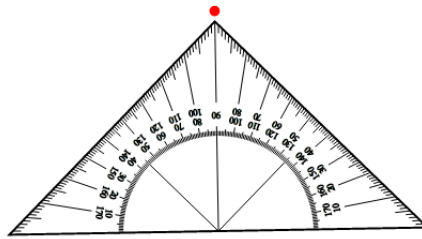
4.1.9. Triangle Information

Element <triangle> (Triangle.Type):

```
<triangle>
  <description>?
  <minDegrees>
  <maxDegrees>
</triangle>
```

Child element:	#	Type:	Pg. Description:
description	?	xs:normalizedString	Some description of the tool. For documentation purposes only.
minDegrees	1	TriangleDegrees.Type	The minimum value on the triangle, expressed in degrees This element is deprecated and should no longer be used.
maxDegrees	1	TriangleDegrees.Type	The maximum value on the triangle, expressed in degrees This element is deprecated and should no longer be used.

Here is an example of a triangle shown by Facet:



4.1.10. Media Player Information

Element <mediaPlayer> (MediaPlayer.Type):

```
<mediaPlayer qtiMediaInteractionIdentifierRef = xs:normalizedString >
  <description>?
  <showToolBar>
  <enabledControl>*
</mediaPlayer>
```

Attribute:	#	Type:	Pg.	Description:
qtiMediaInteractionIdentifierRef	1	xs:normalizedString		

Child element:	#	Type:	Pg.	Description:
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.
showToolBar	1	xs:boolean		Whether or not to show the media player's toolbar.
enabledControl	*	MediaPlayerControl.Type		Controls that are visible/enabled on the toolbar.

start
stop
pause
rewind
fastforward
scroll

4.1.11. Text Marker Information

Element <textMarker> (TextMarker.Type):

```
<textMarker>
  <description>?
</textMarker>
```

Child element:	#	Type:	Pg.	Description:
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.

4.1.12. Reset Information

The reset tool will provide the student with the means to reset the input to its initial value.

Element <reset> (Reset.Type):

```
<reset>
  <description>?
</reset>
```

Child element:	#	Type:	Pg.	Description:
description	?	xs:normalizedString		Some description of the tool. For documentation purposes only.

4.2. Window Information

A <window> element describes the properties (width, height, type, etc.) of a window on the screen. This window can be used for pop-up information (pg. 13)

Element <window> (Window.Type):

```
<window identifier = xs:ID >
  <dimensions>?
  <modal>
  <resizeMode>?
</window>
```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:ID		The identifier of this window.

Child element:	#	Type:	Pg.	Description:
dimensions	?	Dimensions.Type	19	The dimensions (width, height) of the window
modal	1	xs:boolean		Whether or not the window is modal (a modal window must be closed first before the student can continue)
resizeMode	?	WindowResizeMode.Type		Determines whether the window is fixed size or resizable. <div> <div>fixed</div> <div>sizable</div> </div>

4.3. Pop-up Information

A <popupInfo> element describes the contents of a window with pop-up information. This information is shown when the student clicks on a piece of text or an asset.

Element <popupInfo> (PopupInfo.Type):

```
<popupInfo>
  <content>
    <window>
  </popupInfo>
```

Child element:	#	Type:	Pg.	Description:
content	1	PopupContent.Type		See below.
window	1	PopupWindow.Type		See below.

```
<content qtiWindowContentIdentifierRef = xs:normalizedString >
  <triggerContent>
</content>
```

Attribute:	#	Type:	Pg.	Description:
qtiWindowContentIdentifierRef	1	xs:normalizedString		The identifier of the text or asset in the item's content that is the trigger for showing the pop-up.

Child element:	#	Type:	Pg.	Description:
triggerContent	1	QTIBlock.Type		The contents of the pop-up window. This must be expressed as QTI block contents (in the QTI namespace http://www.imsglobal.org/xsd/imsqti_ext_v2p1).

```
<window identifierRef = xs:IDREF >
  <caption>
</window>
```

Attribute:	#	Type:	Pg.	Description:
identifierRef	1	xs:IDREF		The identifier of the window to be used for this pop-up information.

Child element:	#	Type:	Pg.	Description:
caption	1	xs:normalizedString		The caption (title) of the window.

4.4. Reference Information

A <referenceInfo> element is used to specify additional reference materials (like maps, longer pieces of text, etc.) for the student. Reference materials must be in (X)HTML format. Here is an example:

```
<referenceInfo>
  <dimensions>
    <width>437</width>
    <height>520</height>
  </dimensions>
  <display>default</display>
  <content>
    <caption/>
    <href>../ref/reference.html</href>
  </content>
</referenceInfo>
```

Element <referenceInfo> (ReferenceInfo.Type):

```
<referenceInfo>
  <dimensions>?
  <display>
  <content>+
</referenceInfo>
```

Child element:	#	Type:	Pg.	Description:						
dimensions	?	Dimensions.Type	19	The dimensions (width, height) of the window for displaying the reference materials.						
display	1	ReferenceDisplay.Type		Defines how the items are displayed. <table><tr><td>default</td><td>The items are displayed as a single piece of text.</td></tr><tr><td>tabular</td><td>The items are displayed in tabs.</td></tr><tr><td>accordion</td><td>The items are displayed in an "accordion": Headers are shown, you can click on a header to expand the information below/inside it ("vertical tabs").</td></tr></table>	default	The items are displayed as a single piece of text.	tabular	The items are displayed in tabs.	accordion	The items are displayed in an "accordion": Headers are shown, you can click on a header to expand the information below/inside it ("vertical tabs").
default	The items are displayed as a single piece of text.									
tabular	The items are displayed in tabs.									
accordion	The items are displayed in an "accordion": Headers are shown, you can click on a header to expand the information below/inside it ("vertical tabs").									
content	+	ReferenceContent.Type		See below.						

```
<content>
  <caption>
  <href>
</content>
```

Child element:	#	Type:	Pg.	Description:
caption	1	xs:normalizedString		Caption of window that shows the reference material.
href	1	xs:anyURI		URI of the reference material specification, e.g. ../ref/refpage1.html

4.5. Scoring Information

The scoring information is for items that cannot be scored automatically like those that contain `<extendedTextInteraction>` elements. These must be scored manually (by a scorer). The `<scoringInfo>` element allows you to define the aspects to score on and how these are transformed into an actual score (coupled to a QTI outcome declaration).

Here is an abbreviated example. Assume the QTI item looks like this:

```
<assessmentItem xmlns="http://www.imsglobal.org/xsd/imsqti_v2p1">

  <responseDeclaration baseType="string" cardinality="single" identifier="RESPONSE"/>

  <outcomeDeclaration cardinality="single" identifier="SCORE" baseType="integer">
    <!-- ... -->
  </outcomeDeclaration>
  <outcomeDeclaration normalMaximum="3" normalMinimum="0" cardinality="single"
    identifier="qtiAspectInhoudOutcomeDeclaration" view="scorer" baseType="integer"/>

  <!-- ... -->

  <itemBody class="defaultBody">
    <p>Tell us something about the ...</p>
    <extendedTextInteraction responseIdentifier="RESPONSE" expectedLines="4" expectedLength="230"/>

    <rubricBlock id="qtiScoringRubricBlock" view="scorer">
      <p>Instruction to the scorer: ...</p>
    </rubricBlock>

    <rubricBlock id="qtiAspectInhoudRubricBlock" view="scorer">
      <p>Example of a correct answer ... This scores 3 points. Otherwise score ...</p>
    </rubricBlock>

  </itemBody>
</assessmentItem>
```

We can then specify that there are instructions for the scorer in this item as follows:

```
<dep:depItem xmlns:dep="http://www.imsglobal.org/xsd/imsqti_ext_v2p1">
  <!-- ... -->
  <dep:scoringInfo>
    <dep:instruction qtiRubricBlockIdentifierRef="qtiScoringRubricBlock"/>
    <dep:aspect>
      qtiOutcomeDeclarationIdentifierRef="qtiAspectInhoudOutcomeDeclaration"
      qtiRubricBlockIdentifierRef="qtiAspectInhoudRubricBlock">
    <dep:caption>Contents</dep:caption>
    </dep:aspect>
  </dep:scoringInfo>
  <!-- ... -->
</dep:depItem>
```

Remark: You might have noticed that the QTI example also has an outcome declaration called `SCORE`. The presence of such an outcome declaration is mandatory, but for cases like this it is not filled/used.

Element `<scoringInfo>` (ScoringInfo.Type):

```
<scoringInfo>
  <instruction>
  <aspect>+
</scoringInfo>
```


Child element:	#	Type:	Pg.	Description:
instruction	1	ScoringInstruction.Type		See below.
aspect	+	ScoringAspect.Type		See below.

```
<instruction qtiRubricBlockIdentifierRef = xs:normalizedString />
```

Attribute:	#	Type:	Pg.	Description:
qtiRubricBlockIdentifierRef	1	xs:normalizedString		Specifies the identifier of a <rubricBlock> element in the QTI <itemBody> that contains the general information to be displayed as an instruction to the scorer. This <rubricBlock> <i>must</i> have the attribute view="scorer" set.

```
<aspect qtiRubricBlockIdentifierRef = xs:normalizedString
  qtiOutcomeDeclarationIdentifierRef = xs:normalizedString >
  <caption>
</aspect>
```

Attribute:	#	Type:	Pg.	Description:
qtiRubricBlockIdentifierRef	1	xs:normalizedString		Specifies the identifier of a <rubricBlock> element in the QTI <itemBody> that contains the information to be displayed as description of the scoring aspect to the scorer. This <rubricBlock> <i>must</i> have the attribute view="scorer" set.
qtiOutcomeDeclarationIdentifierRef	1	xs:normalizedString		Specifies the identifier of an <outcomeDeclaration> element in the QTI that specifies the type and range for the scoring aspect. This <outcomeDeclaration> <i>must</i> be of type integer and have the attribute view="scorer" set.

Child element:	#	Type:	Pg.	Description:
caption	1	xs:normalizedString		The caption (title) for this aspect.

4.6. Matching elements Information

The <matchingElements> element allows you to create a specific kind of assessment in which select interactions (clicking on parts of a sentence) are coupled with specific text entry interactions. This mechanism is described in [DEP-QAR].

Element <matchingElements> (MatchingElements.Type):

```
<matchingElements>
  <matchingElement>+
</matchingElements>
```

Child element:	#	Type:	Pg.	Description:
matchingElement	*	MatchingElement.Type		See below.

```
<matchingElement selectedElementId = xs:normalizedString
  matchingElementId = xs:normalizedString />
```

Attribute:	#	Type:	Pg.	Description:
selectedElementId	1	xs:normalizedString		The identifier of the select interaction.
matchingElementId	1	xs:normalizedString		The identifier of the matching text entry interaction.

Here is how such an interaction might look like:

Niveau: havo

De Nederlanders begonnen al op de vissersboten met het kaken van de gevangen haring, zodat die extra lang vers en smaakvol **bleven**.

In de tekst staat een fout.

Klik op de fout en verbeter die.

1 bleven.

4.7. Math elements Information

The <mathElements> element defines the elements in the QTI for which the formula editor must be shown. This can be either <extendedTextInteraction> or <textInteraction> elements.

For each location you can optionally define a precursor formula. This formula is shown in the formula editor when it pops up. This precursor formula must be defined in MathML but *must be in the extension document as a string*, not as XML! This is usually done with an XML CDATA section. For instance:

```

<mathElements>
  <mathElement identifier="textEntryInteraction-1">
    <precursor newLine="false">
      <![CDATA[
        <math xmlns="http://www.w3.org/1998/Math/MathML">
          <mrow>
            <mi>a</mi>
            <mo>&InvisibleTimes;</mo>
            <msup>
              <mi>x</mi>
              <mn>2</mn>
            </msup>
            <mo>+</mo>
            <mi>b</mi>
            <mo>&InvisibleTimes;</mo>
            <mi>x</mi>
            <mo>+</mo>
            <mi>c</mi>
          </mrow>
        </math>
      ]]>
    </precursor>
  </mathElement>
</mathElements>

```

Element <mathElements> (MathElements.Type):

```

<mathElements>
  <mathElement>*
</mathElements>

```

Child element:	#	Type:	Pg.	Description:
mathElement	*	MathElement.Type		See below.

```

<mathElement identifier = xs:normalizedString >
  <precursor>?
  <enabledControl>*
</mathElement>

```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:normalizedString		Identifier of the element for which the formula editor must be shown.

Child element:	#	Type:	Pg.	Description:																			
precursor	?	Precursor.Type		An optional precursor formula that is displayed by default in the formula editor. This precursor must be expressed as a <i>string</i> that contains a MathML formula (see the example above). Has a mandatory boolean <code>newLine</code> attribute. When <code>true</code> the cursor in the formula editor will be located on the next line (instead of after the precursor formula).																			
enabledControl	*	EnabledControl.Type		Allows you to control which buttons must be shown for this instance of the formula editor. <table><tr><td><code>fraction</code></td></tr><tr><td><code>power</code></td></tr><tr><td><code>squareroot</code></td></tr><tr><td><code>cuberoot</code></td></tr><tr><td><code>add</code></td></tr><tr><td><code>subtract</code></td></tr><tr><td><code>multiplication</code></td></tr><tr><td><code>division</code></td></tr><tr><td><code>dot</code></td></tr><tr><td><code>isequal</code></td></tr><tr><td><code>isnotequal</code></td></tr><tr><td><code>approximatelyequal</code></td></tr><tr><td><code>greaterorequal</code></td></tr><tr><td><code>lessequal</code></td></tr><tr><td><code>lessthan</code></td></tr><tr><td><code>greaterthan</code></td></tr><tr><td><code>parentheses</code></td></tr><tr><td><code>pi</code></td></tr><tr><td><code>enter</code></td></tr></table>	<code>fraction</code>	<code>power</code>	<code>squareroot</code>	<code>cuberoot</code>	<code>add</code>	<code>subtract</code>	<code>multiplication</code>	<code>division</code>	<code>dot</code>	<code>isequal</code>	<code>isnotequal</code>	<code>approximatelyequal</code>	<code>greaterorequal</code>	<code>lessequal</code>	<code>lessthan</code>	<code>greaterthan</code>	<code>parentheses</code>	<code>pi</code>	<code>enter</code>
<code>fraction</code>																							
<code>power</code>																							
<code>squareroot</code>																							
<code>cuberoot</code>																							
<code>add</code>																							
<code>subtract</code>																							
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<code>dot</code>																							
<code>isequal</code>																							
<code>isnotequal</code>																							
<code>approximatelyequal</code>																							
<code>greaterorequal</code>																							
<code>lessequal</code>																							
<code>lessthan</code>																							
<code>greaterthan</code>																							
<code>parentheses</code>																							
<code>pi</code>																							
<code>enter</code>																							

4.8. Toolbox Elements Information

The <toolboxElements> element allows you to define a "toolbox" to be shown to the student when text must be entered in a QTI <extendedTextInteraction>. This toolbox allows the student to enter more than one type of text (e.g. a formula and a table).

Element <toolboxElements> (ToolboxElements.Type):

```
<toolboxElements>
  <toolboxElement>*
</toolboxElements>
```

Child element:	#	Type:	Pg.	Description:
toolboxElement	*	ToolboxElement.Type		See below.

```
<toolboxElement identifier = xs:normalizedString >
  <toolboxEnabledControl>*
</toolboxElement>
```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:normalizedString		The identifier of the QTI interaction element the toolbox must be shown for.

Child element:	#	Type:	Pg.	Description:
toolboxEnabledControl	*	ToolboxEnabledControl.Type		Which control(s) to enable for the toolbox. <div><div>math</div><div>shapes</div><div>tables</div></div>

4.9. Inline Choice Rich Text Information

The <inlineChoiceRichTextInteraction> element allows you to provide rich content (e.g. images or tables) for the choices of a QTI inline choice interactions. For example, assume the QTI contains the following inline choice interaction:

```
<p>Select the alternative: <inlineChoiceInteraction id="interaction-id" responseIdentifier="RESPONSE"
  shuffle="false" required="true">
  <inlineChoice identifier="A"/>
  <inlineChoice identifier="B"/>
  <inlineChoice identifier="C"/>
</inlineChoiceInteraction>
</p>
```

The extension that adds rich content to the choices might look like this:

```
<inlineChoiceRichTextInteraction identifier="interaction-id">

  <inlineChoiceRichText identifier="A">
    <imsqti:table xmlns:imsqti="http://www.imsglobal.org/xsd/imsqti_v2p1">
      <imsqti:colgroup>
        <imsqti:col/>
      </imsqti:colgroup>
      <imsqti:tbody>
        <imsqti:tr>
          <imsqti:td>
            <imsqti:p>The
              <imsqti:img alt="german.png" src="../img/german.png" width="16" height="11"/> flag.</imsqti:p>
            </imsqti:td>
          </imsqti:tr>
        </imsqti:tbody>
      </imsqti:table>
    </inlineChoiceRichText>

    <inlineChoiceRichText identifier="B">
      <imsqti:p xmlns:imsqti="http://www.imsglobal.org/xsd/imsqti_v2p1">The <imsqti:img width="16" height="12"
        alt="french.png" src="../img/french.png"/> flag</imsqti:p>
    </inlineChoiceRichText>

    <inlineChoiceRichText identifier="C">
      <imsqti:p xmlns:imsqti="http://www.imsglobal.org/xsd/imsqti_v2p1">Otherwise...</imsqti:p>
    </inlineChoiceRichText>

</inlineChoiceRichTextInteraction>
```

Element <inlineChoiceRichTextInteraction> (InlineChoiceRichTextInteraction.Type):

```
<inlineChoiceRichTextInteraction identifier = xs:ID >
  <inlineChoiceRichText >*
</inlineChoiceRichTextInteraction>
```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:ID		The identifier of the <inlineChoiceInteraction> element this belongs to.

Child element:	#	Type:	Pg.	Description:
inlineChoiceRichText	*	InlineChoiceRichText.Type		Contains the rich text to use for the inline choice entry. Contents can be any QTI (without interactions) and/or MathML. Has a mandatory identifier attribute that holds the identifier of the particular choice (<inlineChoice> element) within the inline choice interaction this rich text is for.

4.10. Gap Text Rich Text Information

The `<gapTextRichTextInteraction>` element allows you to define rich content (e.g. images or tables) for the choices of a gap match interaction. This mechanism is similar to the one described for the inline choice rich text information (pg. 17).

Element `<gapTextRichTextInteraction>` (`GapTextRichTextInteraction.Type`):

```
<gapTextRichTextInteraction identifier = xs:ID >
  <gapTextRichText >*
</gapTextRichTextInteraction>
```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:ID		The identifier of the <code><gapMatchInteraction></code> element this belongs to.
Child element:	#	Type:	Pg.	Description:
gapTextRichText	*	GapTextRichText.Type		Contains the rich text to use for the gap match entry. Contents can be any QTI (without interactions) and/or MathML. Has a mandatory <code>identifier</code> attribute that holds the identifier of the particular choice (<code><gapText></code> element) within the gap match interaction this rich text is for.

4.11. Custom Interactions Extension Information

The `<customInteractionExtensions>` element defines whether a response is expected from a QTI custom interaction (`<customInteraction>` element).

Element `<customInteractionExtensions>` (`CustomInteractionExtensions.Type`):

```
<customInteractionExtensions>
  <customInteractionExtension>*
</customInteractionExtensions>
```

Child element:	#	Type:	Pg.	Description:
customInteractionExtension	*	CustomInteractionExtension.Type		See below.

```
<customInteractionExtension identifier = xs:normalizedString
  minValues? = xs:integer (0..1) />
```

Attribute:	#	Type:	Pg.	Description:
identifier	1	xs:normalizedString		The identifier of the <code><customInteraction></code> element this belongs to.
minValues	?	xs:integer (0..1)		The minimum amount of response values expected from this custom interaction. The only values allowed are 0 for no response and 1 for a single response.

5. Global Types

5.1. Window Dimensions

Used in several places to indicate the size of a pop-up/information window.

Element `<dimensions>` (Dimensions.Type):

```
<dimensions>  
  <width>  
  <height>  
</dimensions>
```

Child element:	#	Type:	Pg.	Description:
width	1	xs:integer		Width of the window (in pixels).
height	1	xs:integer		Height of the window (in pixels).