

DITA 1.3 specialization: Learning Content Extra (LCE)

Documentation for version 1.1

Date: 22 Feb. 2018

Published by XStructuring

The LCE specialization is an extension of the DITA 1.3 L&T in which some more interaction types are defined to make DITA more suitable for educational content.

LCE interaction elements:

- **IceTextEntry** – Fill in the gap, for each gap a correct and one or more alternatives answers can be given.

IceInlineChoice – Text with gaps, for each gap in a drop down menu the answer can be chosen.

- **IceHottext** – Text in which some words or characters can be highlighted through click on them.
- **IceGapMatch** – Text with gaps and given words which has to pull into the gaps with drag and drop.
- **IceMultipleMatch** – Matrix, creating pairs from two sets of items, n-to-n relations are possible
- **IceAcrosticPuzzle** – one-dimensional crossword, a solution word can be built automatically or can be given.

IceCrossWordPuzzle – two-dimensional crossword

- **IceDrawing** – An image is given on which the student has to draw something
- **IceGraphicGapMatch** – An image on which words or icons must be placed with drag and drop
- **IceGraphicTextEntry** – An image on which words must be filled in in gaps
- **IcePerformQuestion** – Kind of open question, the student does not have to fill in an answer but do something and/or upload an file

The question types **IceTextEntry**, **IceInlineChoice**, **IceGapMatch** and **IceHottext** are so called inline questions. Not because the question is standing inline but the answers are part of a text and thus inline.

Elements used in LCE interactions:

IceTextEntry

- **IceInlineInteractionText** – Container for the text with gaps.
- **IceTextEntryOptions** – Container for the answer(s); beside the correct answer alternatives answers can be given which are partly correct.
- **IceAnswerOptionInline** – Answer. Child-elements 'IceAnswerContentInline', 'IceCorrectResponse2', 'IceAlternativeResponse', 'IceFeedInlineCorrect' and 'IceFeedInlineIncorrect'. After the element 'IceAnswerContentInline' must stand 'IceCorrectResponse2' or 'IceAlternativeResponse' to define if the answer is correct or just an alternative (nearly correct).
- **IceAnswerContentInline** – The actually answer for a gap like a word, number or character.

IceInlineChoice

- IceInlineInteractionText – Container for the text with gaps and their drop down menus.
- IceInlineChoiceOptions – Container for the drop down menu with the answers
- IceChoiceOptionInline – Answer. In the element 'IceInlineChoiceOptions' more than one 'IceChoiceOptionInline' must be given otherwise there is not a choice. One answer must be marked as correct answer with 'IcCorrectResponse2'. Child-elements: 'IceAnswerContentInline', 'IcCorrectResponse2' and 'IceFeedbackInline'. The content model concerning feedback is similar to the one in singleSelect.
- IceAnswerContentInline – Actually word, number or character in the choice list..

IceHottext

- IceInlineInteractionText – Container for the text with ,interactive words or characters.
- IceHottextOption – Answer, interactive word or character. Correct answers must be marked with 'IcCorrectResponse2'. If 'IcCorrectResponse2' is missing, the word or character is interactive but not a correct answer. For each interactive word you can give 'IceFeedbackInlineCorrect' and 'IceFeedbackInlineIncorrect'.
- IceAnswerContentInline – Actually interactive word or character.

IceGapMatch

- IceInlineInteractionText – Container fort text with gaps.
- IceGap – Gap, in which a given word must be placed with drag and drop. The answers are standing separate from text with gaps. Each gap refers to an answer using the href attribute. Thus, one answer can be used in different gaps. In a gap you can give 'IceFeedbackInlineCorrect' and 'IceFeedbackInlineIncorrect'.
- IceGapMap – Container fort he answers, thus the word or characters the student has to use.
- IceGapAnswer – Answer, id requires. Correct answers must be marked with 'IcCorrectResponse'. If 'IceGapAnswer' has an empty isn't marked as correct than it is an extra word to confuse the student.

IceMultipleMatch

- IceMultipleMatch – This questions is built out of three blocke (child elements): 'IceMatchSet1', 'IceMatchSet2' und 'IceMatchMapping'.
- IceMatchSet1 – Container for one or more items which belongs to the first set.
- IceMatchSet2 – Container for one or more items which belongs to the second set,
- IceAssociableItem – Item in 'IceMatchSet1'. Each 'IceAssociableItem' has an attribute 'number' which should contain a unique number/string.

- IceAssociableMatch – Item in 'IceMatchSet2' which can match to an item from the first set. Each 'IceAssociableMatch' has an attribute 'number' which should contain an unique number/string..
- IceMatchMap – Container for pairs.
- IceMatchPair – Container for a pair. A pair contains out of an associable item and match from each set. You can built as many pairs as you want. It is allowed to use an item or match in different pairs. If an item or match is not part of a pair than it is an extra word to confuse the student.
- IceAssociable – Reference element to an associable item or match, use the href attribute herefor.

Note: If you have only direct pairs and no item is used more often then once, it is recommended to use the DITA 1.3 L&T 'IcMatching2'.

IceAcrosticPuzzle

- IceArosticOptionGroup – Container for all 'IceArosticOption'.
- IceArosticOption – Container for one clue and puzzle word.
- IcePuzzleClue – Clue about the word which must be filled in.
- IceArosticWord – Answer/puzzle word
- IceArosticEntryContent – Actually content mostly a word. Each character has to be coded with 'IcePuzzleLetter'.
- IcePuzzleLetter – Character in the puzzle
- IcePuzzleSolution – A special paragraph for the overall solution of a puzzle.
- IcePuzzleSolutionWord – The overall solution, can be filled from the author/editor or filled automatically

IceCrossWordPuzzle

- IceCrossWordGrid – Grid in which a cross word can be build. You can fill in the puzzle letters in the grid entry's where you want them to be standing. The element 'IceCrossWordGrid' is based on table and should be shown like a table in the editor.
- IceCWGRow – A row in the crossword grid
- IceCWGEntry – A grid cell (table cell) in which a 'solutionLetter' can be add. The 'IceCWGEntry' with the first 'solutionLetter' of a word must have an id.
- IceCWOOptionGroup – Container for all 'IceCrossWordOption'
- IceCWOOption – Container for one clue and puzzle word.
- IcePuzzleClue – Clue about the word which must be filled in
- IceGridref – Reference to the place in the grid where the puzzle word must stand/stands, thus the IceCWGEntry
- IceCWWord – Answer/puzzle word. You do not have to fill in the 'IceCWWord' when you have filled in the puzzle word in the grid. But then you must use the 'IceGridref' to point to the grid and set the

attribute 'direction'. Otherwise, when using the 'IceCWWord' you do not have to fill in the grid and/or refer to it. The publication application then should built the grid.

- puzzleLetter – Character in the puzzle
- IcePuzzleSolution – A special paragraph for the overall solution of a puzzle.
- IcePuzzleSolutionWord – The overall solution, can be filled from the author/editor or filled automatically

IceDrawing

- IceDrawingImage – Container for image on which the student must draw.
- IceDrawingAnswer – IceDrawing is an open question, the answer must be checked manual. In 'IceDrawingAnswer' stands the answer, it can be just the right image but also some text..

IceGraphicGapMatch

In this question type some standard DITA 1.3 L&T elements which are defined for 'IcHotspot' are used. To understand the whole 'IceGraphicGapMatch' somehow better, those elements are listened hier as well.

- IceGGMMap – Container for the image and the answers which has to be dragged and dropped onto the image.
- IceGGMMap/image – Image on which the answers must be dropped. For the answers drop areas are shown on the image.
- IceAreaGGM – Container for the answer and drop area, its shape and coordinates
- IceAreaContent – Answer, can be text or an image. If after the element 'IceAreaContent' no element 'IcCorrectResponse2' follows, the answer is just a distractor. You do not have to give the shape and coordinates then.
- IcAreaShape2 – In this element the shape of the drop area is defined. In DITA 1.3 L&T the shapes 'rect', 'circle' and 'poly' are supported.
- IcAreaCoords2 – Contains the coordinates of a drop area

IceGraphicTextEntry

A mix of graphic gap match and text entry. As the 'IceGraphicGapMatch' the 'IceGraphicTextentry' uses some standard DITA 1.3 L&T elements.

- IceGTEMap – Container for the image and the answers which has to be filled in on the image.
- IceGTEMap/image – Image on which the answers must be filled in. For the answers drop areas are shown on the image.'
- IceAreaGTE – Container for the answer and drop area, its shape and coordinates
- IceAnswerOptionInline – Answer, see also IceTextEntry

- **lcAreaShape2** – In this element the shape of the drop area is defined. In DITA 1.3 L&T the shapes 'rect', 'circle' and 'poly' are supported.
- **lcAreaCoords2** – Contains the coordinates of a drop area

IcePerformQuestion

- **IceUploadObject** – In the publication an upload button should be generated for this element

General LCE

Elements

- **IceFeedbackInline** – Feedback element based on ph and can be used in specialized elements which are based also on ph or p
- **score** – Element in which the for an interaction can be defined.
- **IceEduData** – Container element for educational information, should only be used in interactions even it is referenced in de xs:group data and thus allowed everywhere, where data is allowed
- **IceLomEdu** – Container element for the set of metadata elements which are defined for lom educational e.g. lomDifficulty or lomTypicalLearningTime

The elements 'score' and 'IceEduData' (and children) can also be used in DITA 1.3 (L&T) interaction elements.

Attributes

- **answertype** – values: predefined. This attribute should only be used with answer elements only*. An predefined answer is a kind of example how an answer should look like.
- **solutionposition** – text field, only for element solutionLetter, to indicate on which position in an overall solution the letter must stand.
- **direction** – values: horizontal | vertical. Must be used in a crossword puzzle to defined if the crossword entry stands horizontal or vertical in the grid. This attribute can also be used in sequence interaction.
- **shuffle** – values: yes | no. If you want to define if answers must be shuffle or not. Usually this is done by the publication application but maybe not or to overrule it.
- **case-sensitive** – values: yes | no. In a text entry interaction it can be important if the answer is case sensitive or not. This attribute can also be use in puzzle interactions.

All attributes can also be used for DITA 1.3 (L&T) elements.

*Answer elements in LC-2 domain and LCE:

Interaction element	Answer element
---------------------	----------------

lcHotspot2	lcArea2
lcMatching2	lcMatchingPair2
lcMultipleSelect2	lcAnswerOption2
lcOpenQuestion2	lcOpenAnswer2
lcSequencing2	lcSequenceOption2
lcSingleSelect2	lcAnswerOption2
lcTrueFalse2	lcAnswerOption2
IceAcrosticPuzzle	IceArosticOption
IceCrossWordPuzzle	IceCWOption and IceCWGEntry
IceDrawing	IceDrawingAnswer
IceGapMatch	IceGap
IceGraphicGapMatch	IceAreaGGM
IceGraphicTextEntry	IceAreaGTE
IceHottext	IceHottextOption
IceInlineChoice	IceInlineChoiceOptions
IceMultipleMatch	IceMatchPair
IceTextEntry	IceTextEntryOptions