LOBE_PREMIUM: Learning Object Evaluation Instrument (Original Version)

Learning object = dynamic visualization (animation/simulation/video) as core component + associated components like learning activities/assessment questions/solved examples/stepwise lesson plans for teachers (either all or a subset of these components)

Content quality (C)				
Score / **Question**	**0 (Missing)**	**1 (Inadequate)**	**2 (Almost)**	**3 (Target)**
C1. Is the content accurate?*	Content is not accurate at all since it contains many incorrect facts, explanations, graphs or examples.	Some of the content is accurate, but there are one or more major errors such as incorrect explanations or examples or inaccurate activity solutions or incorrect graphical representation; or the way the content is presented is likely to cause major misconception.	Most of the content is accurate and contains correct facts, graphs, explanations and examples, and presents accurate activity solutions. However, there may be a few minor errors; or the way the content is presented may lead to minor ambiguity.	All the content is accurate, and contains correct facts, explanations, examples, graphs and activity solutions.
C2. Is the content sufficient and up-to-date with respect to relevant advances in the topic in a grade appropriate manner?	Content is not sufficient to explain the topic completely.	Content is sufficient to explain the topic but does not include any mention of grade-appropriate relevant advances in the topic.	Content is sufficient to explain the topic and contains some description of grade-appropriate relevant advances in the topic, but the description may be incomplete or contain minor errors.	Content is complete and sufficient to explain the topic, and it includes clear and correct descriptions of grade-appropriate relevant advances in the topic.
C3. Are the assessment questions and their solutions correct, clear and unambiguous?	Assessment questions are missing.	Assessment questions are factually inaccurate; or solutions are wrong.	Most of the assessment questions are factually correct. However, they may be slightly ambiguous in their wording leading to lack of clarity in interpretation; or, solutions may contain minor errors.	All assessment questions and their solutions are factually correct and unambiguous.

C4. Is the spelling, grammar, pronunciation correct and the formatting consistent across various components of the learning object?	There are serious errors in all of spelling, grammar and pronunciation leading to difficulty in comprehension.	There are some errors in spelling, grammar, pronunciation or the formatting is inconsistent which may lead to negative effect on comprehension such as misinterpretation, or need of significant effort to comprehend.	The content is free of spelling, grammar, pronunciation and formatting errors for majority of the time. However, there may be minor errors such as typos. These errors do not have any negative impact on comprehension.	Spelling, grammar, pronunciation and formatting are correct all the time.
C5. Is the language used in the learning object comprehensible to the intended learners?	The language used in the learning object is not comprehensible to learners. It is difficult to understand and the sentences used are tough to follow. For example, the vocabulary used is unfamiliar to the learners. Also, the sentences spoken or those appearing on-screen are too long and convoluted, making it difficult for the learners to get the meaning out of it.	The language used in the learning object is difficult to understand for the learners. For example, The words/phrases used in the learning object is unfamiliar to the learners. They have to do additional work of finding the meaning of the words and phrases before they can start understanding the content or the assessment question.	The language used in the learning object is not easy to follow for the learners. For example, The words/phrases used is familiar to the learners. So they do not have to do additional work of searching for the meaning of the words used. However, the sentences used are too long and convoluted. Students still have to put in extra effort to parse the sentences and make meaning out of it.	The language used in the learning object is comprehensible to learners. It is not difficult to understand and the sentences used are easy to follow. For example, the vocabulary used is familiar to the learners. Also, the sentences spoken or those appearing on-screen are short and simple to follow. Students do not need to spend extra time in comprehending the language used.
Do you want to make any additional remarks about Content quality of this learning object?				

Pedagogical Alignment				
Score / **Question**	**0 (Missing)**	**1 (Inadequate)**	**2 (Almost)**	**3 (Target)**
P1. Are learning objectives stated explicitly?	None of the learning objectives are stated explicitly.	Only some learning objectives are stated explicitly.	All necessary learning objectives are stated explicitly, but they cannot be easily found in expected places like at the beginning of the dynamic visualization or lesson plan.	All necessary learning objectives are stated explicitly. They can be easily found in expected places like at the beginning of the dynamic visualization or lesson plan.
P2. Are learning objectives stated correctly?	None of the learning objectives is stated correctly.	Few of the learning objectives are stated correctly	Most of the learning objectives are stated correctly.	All the learning objectives are stated correctly
P3. Have the prerequisite topics been stated? *Note: It is sufficient to state prerequisite topics which are immediately required at one previous level to understand the content in this learning object. There is no need to go back several levels.*	No prerequisite topics, required to comprehend the current content, has been stated.	Only few of the key prerequisite topics, required for comprehending the current content, has been stated.	Most of the key prerequisite topics required to comprehend the current content, has been stated but there may be a few minor ones, which are not included.	All the key prerequisite topics required to comprehend the current content, has been stated.
P4. Is the content situated in an appropriate context?	No context is provided for the content.	Some context is occasionally provided. However, it is irrelevant to the content.	A relevant context is provided for the content. However, the context may not be sufficient for the specific topic.	A relevant and sufficient context is provided wherever required.
P5. Does the content in the learning object include instances under multiple conditions?	The content includes only a single instance.	The content shows a few instances, but they are insufficient or incorrectly chosen instances.	The content shows instances under multiple conditions but a key condition is missing, or there is an error in the instances shown.	The content shows instances under all necessary and meaningful conditions.
P6. Does the content in the learning object effectively resolve common learner misconceptions?	There is no mention anywhere of any of the common learner misconceptions.	There are explanations to address some common learner misconceptions, but they are not effectively resolved, or key misconceptions are not addressed.	There are interactive activities that learners can use in an attempt to resolve common learner misconceptions. However, interactive activities are missing for some of the key misconceptions.	There are interactive activities that learners can use in order to elicit and resolve all the major misconceptions themselves.

P7. Is the dynamic visualization (video/ animation) organized in segments rather than as a continuous unit?	The dynamic visualization is not segmented and is presented as a continuous unit.	The dynamic visualization is segmented into a set of sub-topics but the segments are not sequenced properly. Or, content is not interleaved with activities, that is, a number of content segments appear one after another, with the activities appearing only towards the end.	The dynamic visualization is properly segmented into a set of sub-topics and sequenced. Each content segment is interleaved with an activity but these segments appear as a physically continuous unit.	The dynamic visualization is properly segmented and sequenced into a set of sub-topics. Each content segment is interleaved with an activity. Additionally, these segments appear as physically separate units. One way to make this happen is that the learning object automatically pauses after each segment containing content and presents an activity for learners.
P8. Are higher order thinking skills (HOTS) being addressed in the dynamic visualization or examples or activities?	HOTS are not being addressed in the dynamic visualization, examples or activities and they are limited to Recall only.	HOTS are not being addressed, but the dynamic visualization, examples or activities address upto Understand level with learners doing some interpretation or explanation.	HOTS are being addressed to some extent in the dynamic visualization, examples or activities. However, some of the important HOTS relevant for the topic are missing.	HOTS are being sufficiently addressed in the dynamic visualization, examples or activities. (Sufficiently addressed means the HOTS important for the topic has been included.)
P9. Are the activities in the lesson plan aligned to the learning objectives?	The lesson plan does not contain activities that are at the same cognitive level as any of the learning objectives.	The lesson plan contains activities that are at the same cognitive level for some of the learning objectives. However, a majority of learning objectives, especially at HOTS levels, are not addressed by the activities in the lesson plan. Or, the activities seem like they are at the same cognitive level as the learning objectives, but the activity is unlikely to achieve the purpose of the learning objective.	The lesson plan contains activities that are at the same cognitive level for most learning objectives. However, a few learning objectives are missing lesson plan activities at the corresponding level.	The lesson plan contains one or more activities that are at the same cognitive level for all learning objectives.

P10. Does the learning object promote learner-centric learning?	The learning object does not allow the learners to work in a learner-centric manner. There is only show and tell.	There are some activities in the learning object but these are very structured and guided. Learners may wind up following the procedural steps while performing these activities. Thus, there is limited opportunity for learners to construct their own understanding. Or, the majority of the lesson plan is teacher-centric, i.e. they are based on teachers doing transmission of information and demo of animation/video.	There are activities that are intended to promote learner-centric learning. However some of the important features of learner-centric learning are missing in the design of such activities, or, there are a few instances in the lesson plan which should be converted from teacher-centric to learner-centric. For example, the activity is worded in such a way that it explains the probable solution without requiring the learners to think and express their reasoning, or, connection between the activity and the content is not clearly brought out, or learners are not required to reflect and make sense.	There are sufficient activities relevant to the content that allow learners to construct their own understanding. The lesson plan, if present, requires learners to interact with these activities and do as many of the following as relevant: connect the content to what they already know, organize and make sense of the content, express their reasoning, test and revise their understanding, apply the content, do problem solving, and so on.
P11. Does the lesson plan provide opportunities to diagnose learners' learning gaps and fix them?	The lesson plan provides no opportunities for diagnosis of learners' learning gaps by neither the teacher nor the learners themselves.	The lesson plan provides opportunities where teachers can diagnose learners' learning gaps (like doing unstructured activities e.g. asking for doubts). It does not however equip the learners to diagnose themselves.	The lesson plan provides opportunities where learners themselves can diagnose their learning gaps (like doing structured activities like small group activities that lets them compare their solution with their classmates). However, it does not equip them to fix the gaps on their own.	The lesson plan provides opportunities where learners can themselves diagnose their learning gaps and subsequently fix them (like discussing and reflecting on their solution with their classmates in a group).

P12. Does the lesson plan provide opportunities to learners to do group activity involving the learning object?	Lesson plan does not provide any opportunities to the learners to do group activity involving the learning object. For example, there are group activities in the lesson plan. But they do not involve the learning object. Or, there are activities in the lesson plan involving the learning object. But they are meant to be done individually by the learners.	Lesson plan provides opportunities to the learners to do group activity involving the learning object. But the likelihood of all learners participating is low due to the structure of the activity. For example, teacher poses the activity question to the whole class. After a few minutes of discussion within the students, teacher calls for responses from the class. The activity question involves the learning object, of course.	Lesson plan provides opportunities to the learners to do group activity involving the learning object. The structure of the activity is such that there is a high likelihood that all learners in the class will participate. However, the activity does not require the learners to engage in logical argumentation with their group members. For example, the group activity involves small learner groups (2-4) discussing the activity question posed by the teacher. This enhances likelihood of all the learners participating in the activity. But the group activity simply involves learners comparing each other's solutions & checking if they match or not. The activity does not prompt the learners to think and discuss the logical reasoning behind their solutions with their group members.	Lesson plan provides opportunities to the learners to do group activity involving the learning object. The structure of the activity is such that there is a high likelihood that all learners in the class will participate. The activity also requires the learners to engage in logical argumentation with their group members. For example, the group activity requires the learners to compare each other's solutions, think and discuss with their group members the logical reasoning behind their solutions.
P13. Does the lesson plan integrate various components of the learning object - dynamic visualization, activities, examples and assessment questions - in a meaningful way?	The lesson plan does not attempt to integrate various components of the learning object at all.	The lesson plan attempts to integrate components of the learning object. However, the integration is not meaningful. That is, when one component is being used, it arbitrarily refers to another component, but such an attempt at integration is unlikely to enhance learning.	There are some instances where the lesson plan integrates components of the learning object in a meaningful way. However, a few meaningful integrations have been missed.	The lesson plan integrates components of the learning object wherever meaningful, i.e. when one component is being used, it calls in and uses another component in a way that is likely to enhance learning.

P14. Are the assessment questions aligned to the learning objectives?	None of the learning objectives has assessment questions aligned at the corresponding cognitive level.	Only some learning objectives have assessment questions aligned to the corresponding cognitive level.	A majority of learning objectives have assessment questions aligned to the corresponding cognitive level.	All learning objectives have assessment questions aligned at corresponding cognitive level.
P15. Do the assessment questions contain an appropriate context?	No context is provided in any assessment question.	A context is occasionally provided in a few assessment questions but a context is missing in most assessment questions.	A context is provided in sufficient assessment questions. However, in some questions, the context may not be meaningful.	An appropriate and meaningful context is present in sufficient number of assessment questions.
P16. Do the assessment questions or activities in the learning object provide adequate corrective and explanatory feedback to learners?	No feedback is provided to learners in the assessment questions or activities.	Feedback is provided by assessment questions or activities. However, in most cases, the feedback is only in binary format of correct or incorrect without further explanation.	Feedback is provided by most of the assessment questions or activities. The feedback informs learner of whether their response is correct or incorrect and why so.	Feedback is provided by most of the assessment questions or activities. The feedback informs learners not only of the correct response along with explanation, but also remedial help is provided. This guides learners to revisit specific content portions for better understanding.
P17. Have any segments from the dynamic visualization been reused, such as in the activities or assessment questions?	No segments from the dynamic visualization have been reused.	A few segments from the dynamic visualization have been reused in the activities or assessment questions. However, there are many other pedagogical opportunities for reuse, which have not been used.	Some segments from the dynamic visualization have been reused in the activities or assessment questions. There are a few others not reused, but could have been reused for effective learning.	Sufficient relevant segments from the dynamic visualization have been reused in the activities or assessment questions.
P18. Is there adequate representation of diversity in the learning object?	No consideration is given to include diversity in terms of gender, race, socio-economic class, religion, looks etc.	An attempt has been made to include diversity in the learning object, but major sections of society have been missed out, leading to an inadequate representation.	Serious consideration has been given to include diversity, and most sections of society have adequate representation. However, a few are missing.	A systematic effort has been implemented to include diversity in various components of the learning object. There is adequate representation of the relevant sections of society in terms of gender, race, socio-economic class, religion, looks etc.
Do you want to make any additional remarks about Pedagogical alignment quality of this learning object?				

Design efficacy (D)				
Score / Question	0 (Missing)	1 (Inadequate)	2 (Almost)	3 (Target)
D1. Do the graphics and sound in the learning object serve an instructional or motivational purpose and not merely cosmetic?	Graphics and sound have been used merely for cosmetic reasons, and serve no instructional or motivational purpose.	Some but not all graphics and sound seem to serve instructional or motivational purposes. However: i) Their specific purpose and how they support learning may not be clear or, ii) There exist a fair number of graphics or sound, which are unnecessary and can lead to distraction. OR Sufficient amount of graphics have not been used to make the content better understandable	Many graphics and sound serve clear and important instructional purposes, for example, the content is better understandable due to the presence of the graphic. However, there exist some unnecessary graphics or sound that may be distracting and do not clearly support an instructional or motivational goal.	i) Mostly all graphics and sound serve clear and important instructional purposes, for example, the content is better understandable due to the presence of the graphic. AND ii) If any graphic or sound is used for motivational purposes alone, it is done sparingly. Also, they are likely to support better learning (such as higher attention).
D2. Does the dynamic visualization component avoid adding on-screen text explanations to narrated graphics?	No. The dynamic visualization presents explanations to the same content as narrated graphics as well as through on-screen text. This is likely to affect learning as learners have to decipher the movement on-screen (dynamic visualization) and resolve the competing pull of the textual and verbal explanation simultaneously presented to them.	For the most part, the dynamic visualization presents explanations as either visuals and voice-over or, as visuals and on-screen text explanation. But, in a few places it adds on-screen text to narrated visuals. Also, these few cases do not fall under the exception cases listed. This makes it difficult for learners to comprehend the content. Or, If it is any of the exception cases, the other way round i.e. on-screen text without voiceover would have made it easier for learners to comprehend.	The dynamic visualization presents content explanations as on-screen text. There is no voice-over. But, use of voice-over in place of on-screen text would have made it easier for the learners to comprehend the content. Or, If it is any of the exception cases, the other way round i.e. on-screen text without voiceover would have made it easier for learners to comprehend.	The dynamic visualization present explanations as voice-over rather than on-screen text, unless it is an exception case where on-screen text is preferred over voice-over. However, it does not add on-screen text to the narrated visuals. This makes it easier for the learners to comprehend the content.

D3. Does the dynamic visualization include cues that highlight the organization of the essential content on-screen?	No. None of the important information in the dynamic visualization is highlighted by using cues (visual or verbal). Thus, there is a chance that learners might overlook the important information presented on-screen.	Some but not all of the important information in the dynamic visualization is highlighted by using cues (visual or verbal). However, some unimportant information has unnecessarily been highlighted. This can lead to distraction for the learners.	Some but not all of the important information in the dynamic visualization is highlighted by using cues (visual or verbal). However, unimportant information has not been unnecessarily highlighted. So, learners might overlook some of the important information that was not highlighted. But they are not distracted by highlighting of unnecessary information.	The dynamic visualization uses cues (visual or verbal) to focus learners' attention on all the important information presented in the dynamic visualization. It does not highlight any unimportant information. So, learners do not overlook any of the important information presented in the dynamic visualization. Also, they are distracted by highlighting of any unimportant information.
D4. Does the learning object enable the learners to process the relevant information quickly?	No. The learning object does not assist learners to process relevant information quickly. For example, the text labels and the corresponding graphics are not placed next to each other. Also, the assessment solutions are presented without the corresponding assessment questions. Additionally, the audio, if present, is not synchronized with the dynamic visualization.	The learning object only partially assists learners to process relevant information quickly. For example, the text labels and the corresponding graphics are not placed next to each other Or, The assessment solutions are not presented with the corresponding assessment questions. Or, the audio, when present, is not synchronized with the dynamic visualization. This may require learners to pause till the audio starts.	The learning object majorly assists learners to process relevant information quickly. For example, text labels or assessment solutions are placed next to the corresponding graphics or assessment question. Audio, if present, is synchronized with dynamic visualization. But, learners have to scroll up and down to locate the relevant information. This disturbs the learning flow of the learners	The learning object enables learners to process relevant information quickly. For example, text labels or assessment solutions are placed next to the corresponding graphics or assessment question. Audio, if present, is synchronized with dynamic visualization. Additionally, learners do not need to scroll up and down to locate relevant information
D5. Does the learning object use a conversational style and include on-screen coaches?	The style of speech is formal and didactic and there is no on-screen coach.	There is an attempt to use conversational style occasionally, but it is not present in many parts of the learning object. No on-screen coach or pedagogical agent is present.	A serious effort has been made to use conversational style, but it is not always present. An on-screen coach or pedagogical agent is present for some tasks (such as giving motivation), but is not present for an important task (such as giving feedback).	A conversational style has been used throughout the learning object, to give instructions and feedback. In addition, an on-screen coach or pedagogical agent is present which motivates and guides the learner along with giving instructions and feedback.

D6. Are all the related visual elements in the learning object placed together on screen?	Visual elements with different purposes are mixed up on-screen i.e. the elements are visually unsorted. For example, the brightness button is placed next to the volume button but their purpose is different.	Visual elements are grouped but the grouping is random, not based on a purpose. For example, the visual elements in the display area like play-pause buttons and the elements in the interactive area like input boxes, slider bars are sorted into separate groups. But the elements within the interactive area are not further grouped based on a purpose.	Visual elements are grouped based on a purpose. However, lack of visual distance between the groups makes them appear related to each other. For example, the intended purpose is to show a pair of input box and a slider bar for each variable and replicate them for multiple variables. If similar visual distance is kept between an input box-slider bar (in a row) and input box-input box (in subsequent rows), then learners may erroneously perceive it as two columns: One of input boxes and other of slider bars.	Visual elements are grouped together based on a purpose and each group is visually separated on-screen. For example, the intended purpose is to show a set of input box and slider bar for each variable. The visual space between each pair (of input box-slider bar) is more than the space between the components of the pair (input box and slider bar). This helps the learner perceive each pair of input box- slider bar as a distinct pair.
D7. Are all the visual elements, needed for doing a given task, clearly visible without extraneous distractions? NOTE: To understand examples accompanying each of the descriptors, refer to the LOBE Tool.	The user cannot easily find the visual elements required to do the given task. It is also not clear what their functionality is. For example, The visual elements irrelevant for the task are not dimmed/ hidden making it difficult for the user to find the relevant ones. Also, their appearance does not make their functionality evident like the search button has only 'S' written on it.	The user cannot easily find the visual elements required to do the given task. However, once found, it is clear what the functionality of the visual element is. For example, The visual elements irrelevant for the task are not dimmed/hidden making it difficult for the user to find the relevant ones. However, their functionality is evident from their appearance like the search button has image of a magnifying glass.	The user can easily find the visual elements required to do the given task. However, once found, it is not clear what the functionality of the visual element is. For example, The visual elements irrelevant for the task are dimmed /hidden. Only the relevant ones are visible and prominent. But their appearance does not make their functionality evident like the search button has only 'S' written on it.	The user can easily find the visual elements required to do the given task. It is also clear what the functionality of the visual element is. For example, the visual elements irrelevant for the task are dimmed / hidden. Only the relevant ones are visible and prominent. The caption or symbol used to represent the element, like Up arrow to scroll up or, next button to move to next page or, magnifying glass label for search, makes its functionality evident.
D8. Does the interface contain appropriate cues to make the user aware of possible interactions?	The interface contains no cues to make the user aware of possible interactions. For example, there is no difference in the appearance	The interface contains some cues to indicate the expected output but the cues are insufficient or not useful in terms of where / when they are provided.	The interface contains sufficient cues, which inform the user about the possibility of interaction, but they are not clear in communicating what will be the effect of the interaction.	The interface contains sufficient and clear cues which inform the user about the possibility of interaction and also communicate what will be the effect of the interaction.

NOTE: To understand examples accompanying each of the descriptors, refer to the LOBE Tool.	of clickable versus non-clickable elements in the interface.	For example, Having an answer-box without a cue whether it expects alphabetic or numeric input is insufficient (Image 1) , Showing an error message about the type of input after the user submits their answer is not very useful (Image 2) .	For example, there is a clickable button which when clicked pauses the AV. However, no conventional symbols (such as two vertical lines) or explicit labels (saying 'Pause') have been used to indicate the function of the button.	For example, a clickable button whose purpose is to pause the AV is accompanied by conventional symbols (such as two vertical lines for pause) or explicit labels (saying 'Pause') to indicate that pressing this button would pause the AV.
D9. Does the interface provide appropriate response (textual, auditory or visual) upon user action? NOTE: To understand examples accompanying each of the descriptors, refer to the LOBE Tool.	The interface does not provide appropriate response to user action. For example, User submits an assessment solution (Image 1) but does not get any confirmation about submission / non-submission, or correct/incorrect (Image 2).	The interface provides response to user action, but some of them are inappropriate. Examples of inappropriate responses: Responses which are delayed, placed far away from user's action area (Image 1), too big (Image 2) / small (Image 3) as compared to other content, wrong or non-conventional (Image 4) graphics (showing broken wire image for network error instead of yellow triangle)	The interface provides response to user action, but some of the responses confuse/obstruct the user from further interaction. For example, Flashy, oversized pop-ups that covers the screen and obstructs the user from interacting further.	Interface provides appropriate response to user action with the interface. For example, Warning or success notifications are displayed immediately following user action, are in proximity of the interaction area or, does not visually obstruct the other information on the screen.
D10. Are the look and feel and the on-screen placement of the visual elements consistent throughout the learning object? NOTE: To understand examples accompanying each of the descriptors, refer to the LOBE Tool.	Learners need to spend time to familiarize themselves with the learning object interface since the look and feel and on-screen placement of the visual elements are inconsistent throughout the learning object. For example, The back button is sometimes blue (Image 1), sometimes green (Image 2), in colour Or, sometimes circular (Image 1) , sometimes rectangular in shape (Image	Learners need to spend time in finding out the visual elements on-screen since their placement is not consistent. However, their look and feel is consistent throughout the learning object. For example, On-screen placement of the slider bar changes across the learning object. In some places, it is placed to the right of the screen	It is easy for the learners to find the visual elements on-screen since their placement is consistent throughout the learning object. However, the changing look and feel hampers usability of the learning object. For example, On-screen placement of the slider bar is consistent across the learning object. So, learners can quickly find the slider bar. However, the behaviour of the slider bar is not	It is easy for the learners to find the visual elements on-screen and interact with them since their look and feel and behaviour is consistent throughout the learning object. For example, The dragging of the slider bar up or to the right causes increase in value (Image 1,2 &3). Also, the slider bar is always to the left of the screen throughout

	2). Simultaneously, it is placed at different points on the screen across different parts of the learning object.	(Image 1), and in other places it is placed at the bottom of the screen (Image 2). So, learners have to search for the slider bar each time. Once located, the functionality of the slider bar remains consistent i.e. dragging slider to the right will increase value	consistent throughout the learning object. Sometimes dragging the slider bar up or to the right causes increase in value (Image 1) but at other times same action results in decrease in value (Image 2).	the learning object (Image 1,2 &3).
Do you want to make any additional remarks about Design efficacy quality of this learning object?				

Technology integration (T)				
Score **Question**	**0** **(Missing)**	**1** **(Inadequate)**	**2** **(Almost)**	**3** **(Target)**
T1. Are the types of visualizations in the learning object chosen such that they are suitable for the corresponding content type?	In none of the visualizations present in the learning object, the visualization type suitably maps to the content type.	In less than half of the visualizations present in the learning object, the visualization type suitably maps to the content type.	In half or more of the visualizations present in the learning object, the visualization type suitably maps to the content type.	In all the visualizations present in the learning object, the visualization type suitably maps to the content type.
T2. Do the dynamic visualization, activities, or assessments include interactivity features that are meaningful for learning the corresponding content?	No interactivity features are included.	Some interactivity features may be included. However, they are insufficient or not meaningful for learning the content.	Most necessary interactivity features are included and they are meaningful for learning the content. However, some interactivity features included are superfluous.	All necessary interactivity features are included in the dynamic visualization, activities, or assessments. They are all meaningful for learning the content. Superfluous interactivities are avoided.
T3. Is there sufficient guidance provided to teachers on how to effectively use the various components of the learning object together?	Provides no guidance to teachers on how to use the various components of the learning object together.	Provides guidance to teachers on which components of the learning object can be used together. However, no guidance provided on how to use the components together.	Provides some stepwise guidance to teachers on which components of the learning object can be used together and how. However, the steps are not detailed enough, or do not contain sufficient information to	Provides detailed, stepwise guidance to teachers not only on which components of the learning object can be used together, but also on how and when. Guidance is provided on how to meaningfully use the technological features.

		For example, the guidance will include the following instructions: Pose this activity question from the learning object and use the dynamic visualization along with the activity.	help the teacher design and implement a lesson to meaningfully use the technology features with suitable pedagogical strategy for the content. Example1: The following guidance is provided to teach with an animation in the learning object: Step 1 – Play the animation Step 2 – Pause the animation and pose this prediction activity Step 3 – Ask learners to make the prediction Step 4 – Resume playing the animation. *Some details are missing – when exactly to pause the animation, should learners make predictions individually or in groups, what to do after resuming etc.* Example 2: The following guidance is provided to teach with a simulation in the learning object: Step 1 - Pose the prediction activity question from the learning object Step 2 - Ask learners answer the question Step 3 - Use the simulation to show learners what will happen. *Some details are missing – should learners make predictions individually or in groups, which values to input in the simulation etc.*	With this guidance, the teacher can design and implement the lesson to make effective use of the technology features (like interactivity) with a suitable pedagogical strategy for the content in the given class time. Example1: The following guidance is provided to teach with an animation in the learning object: Step 1 – Play the animation Step 2 – Pause the animation at specific time-stamps, such as, just before the animation shows a change in behaviour of the system Step 3 - Pose the activity question, such as, predict what will happen to the behaviour of the system Step 4 – Ask learners to work in groups to make the prediction and explain the reasoning behind it Step 5 – Resume playing the animation to show what will happen to the behaviour of the system. Along with it, explain why this change occurred. Example 2: The following guidance is provided to teach with a simulation in the learning object: Step 1 - Pose the prediction activity question Step 2 - Let learners work in groups and make the prediction of the behaviour of the system Step 3 – Use the simulation to give feedback. Move the slider bar to specific values and show the effect on behaviour of the system For example:

				a) (science) The behaviour of water at temperature values of -1^0, 10^0 and 100^0 C b) (maths) The type of angles formed when clock hands display 12:05,12:15, 12:40 and 6:00. Step 4 - Compare and discuss the effects.
T4. Is the interface easy to use for a new user?	The interface is not intuitive, information cannot be found easily, and there is severe inconsistency.	Some tasks within the interface are intuitive and possible to do without assistance. Some information is easy to find in expected places. But for a large number of required tasks (such as going to the previous screen or finding out the organization of content in the learning object), the interface is not easy to use.	Most tasks within the interface are intuitive. Information can be found at most times, but occasionally some effort is needed. There is some lack of consistency, for example, in terms of placement of buttons.	The interface is organized and easy to use. It allows users to do tasks by interacting with the various components of the learning object without difficulty or assistance related to information seeking and navigation.
T5. Does the user have appropriate control of navigation and pace within the learning object?	The user has no control or flexibility. All decisions related to navigation and pace are controlled by the program.	The user has some but not a lot of flexibility and control of navigation and pace. For example, certain navigation paths are allowed, but other required ones are not allowed. Or, only pause and play (but not rewind / forward) are allowed as controls within an animation.	The user has a fair amount of flexibility and control of navigation and pace. However, a few minor controls may not be possible. For example, it may be possible to pause, restart, rewind and forward an animation but not change its speed.	The user has adequate flexibility in terms of navigation and pace control. The user can go from one part of the learning object to another as desired, go back and forth, and interact with the learning object at their desired rate.
Do you want to make any additional remarks about Technology integration quality of this learning object?				