Designing learner-centric e-learning in STEM disciplines
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Lecture - 25
Coherence Principle

So, in the previous learning dialogues we have going through different multimedia principles that help you to be able to create engaging learning content for your students, such principles included redundancy principle, modality principle, any multimedia principle. Now, in this learning dialogue we are going to discuss about some more principles that will help you even create more engaging content for your students as well. And but before we proceed with this learning dialogue let us start with the following reflection spot.

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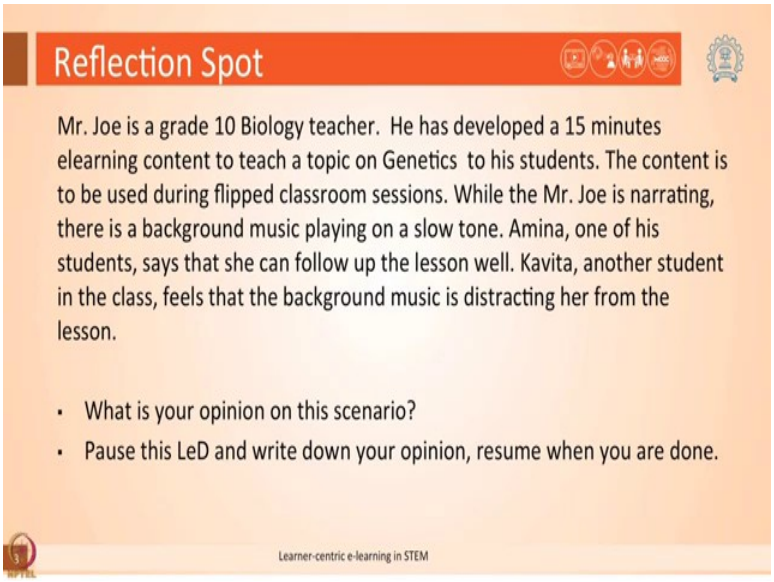

So, Mister Joe is a biology teacher. He has created a 15 minutes e-learning content for his students and he plans to use this content for his students during flipped classroom. But the whenever this quantity is playing there is a background noise, a background music that comes at a slow tone. And Amina is one of his students who uses this content and she says that this content is for her to be able to learn better. However, Kavita is another student of Mister Joe,

who says that this sort of background music is actually distracting her from learning better. Now, what is your opinion about Amina and Kavita? Pause the video, write down your responses and when you are done, resume.

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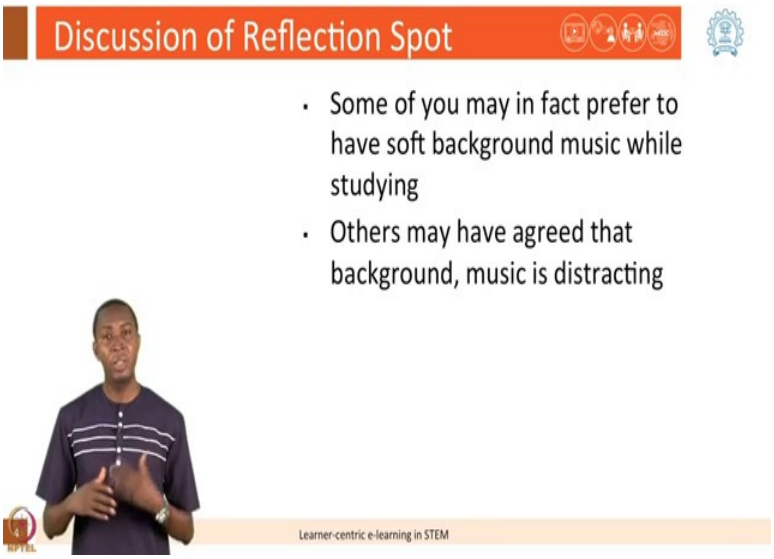

You might have given different suggestions about they effect of the background music in Mister Joe's class, and some of you might have say that for me this type of music or background music is actually important because it helps me to be able to learn better in some situations. And some of you might have say that this type of content which has background music of this sort, at a slow pace could be something distracting and in in some cases I get distracted when I hear how I follow such lessons.

And others may might have said in it differs from situations and situations depending on the type of the content that you are learning and where you want to use that content itself. So, now let us see what cognitive theory of multimedia learning says about the effect of background music in different contents for your students to be able to learn better.

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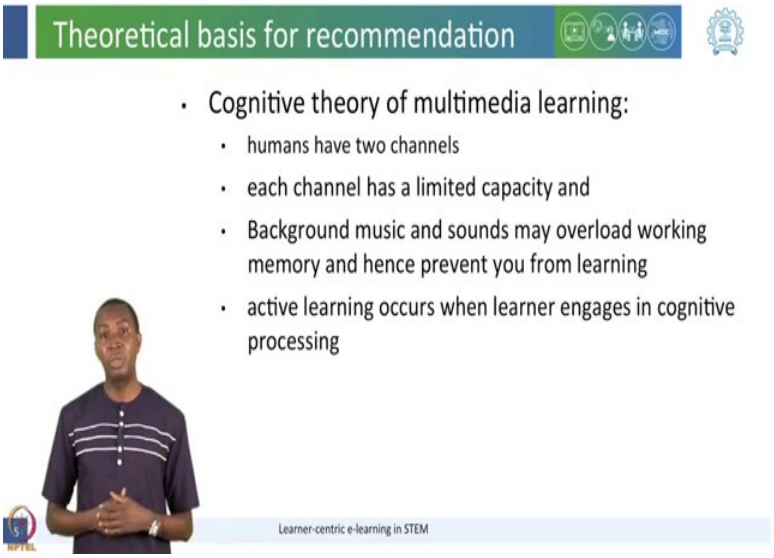

Now, community fear of multimedia learning says that all of humans have two channels, one is used for all the information later to visual or pictorial presentations, but again another channel is basically used for or audio or verbal information that you process.

Now, but all these channels actually limited in terms of capacity and therefore, the more you add information to it or the more you overload it, it becomes a hindrance to some process of learning that may happen in your head. And therefore, in some cases, a some background music may be distracting for some learners, where learners get it difficult to be able to move on as they use that content itself.

So, in most cases active learning occurs whenever the content is engaging, it allows this cognitive process to be able to happen in your own head. Therefore, and this is one of the mistakes that a common instruction designers or e-learning content developers make to use the unrelated background music in such contents which becomes a hindrance to some of your students to be able to learn because in some situations, this may not be a good practice in general.

Therefore, we can generally say that background music may not be suitable in some situations. Situations, such as when the content is actually new to your new students or to your learners, but in some situations where probably the content is actually being spoken or being taught at a pace

that the learner cannot be able to control or at in situations where the learner cannot be able to follow this this speed at which the content is being displayed. So, in such cases the background music may not be actually of importance.

So, generally whenever we are including background music in some content it may affect the learners to be able to learn better because of the noise that comes up and because you are actually overloading your working memory.

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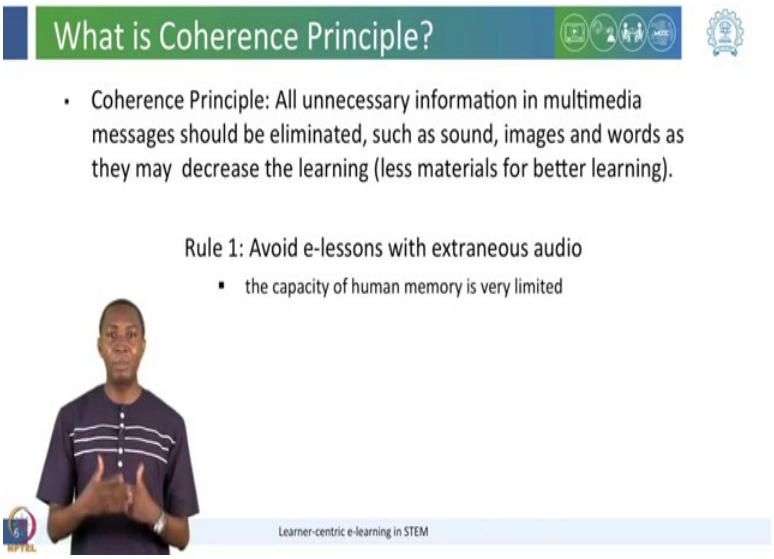

Now, this brings us to a discussion about coherence principle. Coherence principle says that use less materials for your students to be able to learn better. So, what do we mean by this statement is that do not include extraneous words in your content do not use extraneous graphics in your content, but do not use extraneous sounds in your content. Always make it a simple, use only less materials to be able to engage your students and be able to any better in the such situations. And this is a evident in the example have given about the effect of background music in your content.

So, the first rule of coherence principle states that whenever you are creating in any content, whenever you are creating content for your students that involves a lot of channels make sure that you are avoiding all these extraneous sounds that may affect a the human brain, may affect the human memory to be able to work better. Because whenever you are adding extra information such as extra background music or extra sounds, it actually overloads your working

memory and therefore, or it prevents you from the process of learning better for your students or from the process of learning better whenever you are creating the content for your students.

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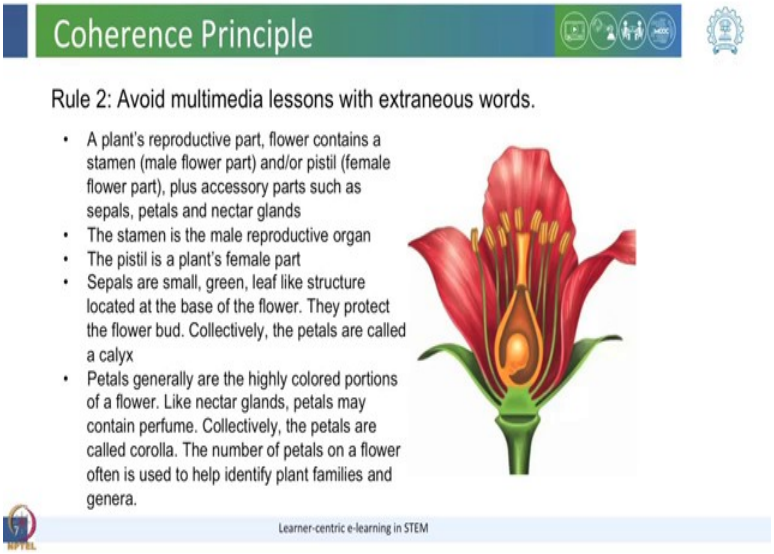

Now, here is a scenario. We are talking about Mr. Joe, again the same biology teacher who teaches now who is teaching and about flowers. So, he has he has created the content about flowers for his students and he wants. The main objective of this content is actually the students be able to understand and identify the parts of the flowers. Now, he has created the following content as you see here that the students need to go through and be able to learn and understand about the parts of the flower.

Now, take a moment, take a few seconds, look into this image here and then think of what is wrong with this particular image that you see on this side. So, as you can see this image is full is full of text, you can see that it has a lot of text on the left side of the image, but again you have the flower being put on the right side of the image. So, this amount of informational text becomes a little bit cumbersome for students to be able to follow to be able to learn better. And this is actually what you call the second rule of the coherence principle which states that avoid extraneous words to an e-learning content that your students need to undergo.

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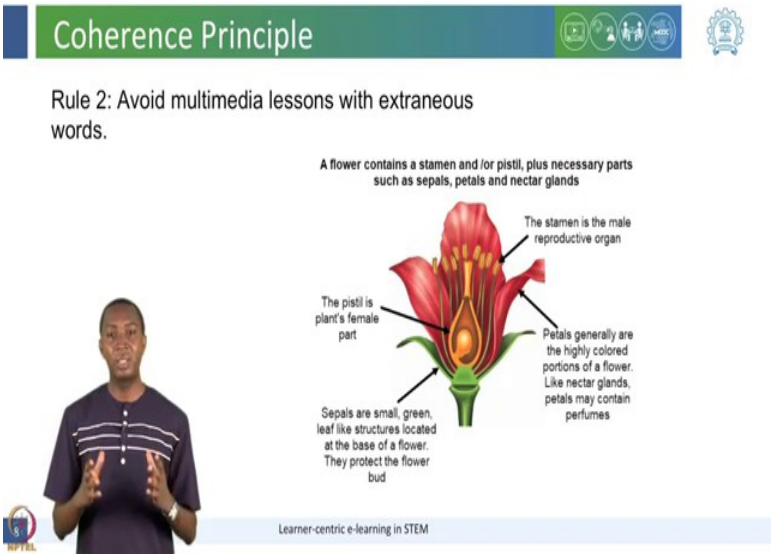

Now, if we look into this image here, we can be able to see that all the text that has been there in the previous image have been reduced in the sense that students can now be able to learn better. And you can see that the flower itself has different parts that are shown and each part has been labeled by a little bit of a diagram, and a little bit of details. And again in this way we can also therefore, be able to reduce the amount of text that has been shown in the previous image to this new image, and this makes it easier for learners to be able to follow up the relation much more easier, and it allows the learner to be able to pay attention to all the details of the a flowers as it is shown. In this case therefore, you allow your learners to be able to learn better.

So, this is an example where the principle of coherence has been applied on rule number 2, which says that always avoid extraneous words into your content, so that your students can be able to learn better and adjust better the information that is put on that particular image.

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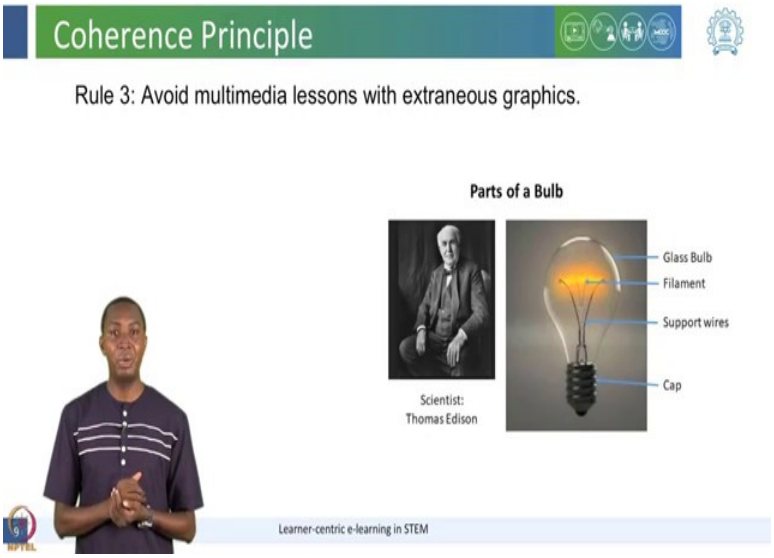

Now, let us look into another example where we speak about Mister James who is a physics teacher now. So, Mister James is a physics teacher, who prepares a lesson about light bulbs his main objective for his students is actually to be able to identify the parts of a bulb and then be able to look at them. And then look into this picture here, and take a moment think of the picture and image, and then think of what is wrong with this particular image here.

Now, if you look into the image you see that the image consists of two parts, one has a picture of Thomas Edison, who is the inventor of the bulb and the other part has a picture of the bulb itself with different paths. Now, if you look into the objective of this lesson we see that objective of this lesson was actually to allow students to be able to identify the different parts of a bulb.

Now, there is an extra graphic that has been added this picture of Thomas Edison, which was not important to be put in this particular image here. So, adding such information or such details or such graphics into a lesson may hinder the process by which your students can be trained because it actually adds a load to your cognitive capacity and therefore, overloading of your memory member may lead to less learning and therefore, preventing the learner to be able to learn.

This is actually rule number 3 of coherence principle which says that always avoid multimedia lessons that have extraneous graphics. So, omit or graphics that is not important to be put to be

part of a lesson, so that learners can be able to grasp the information that is required at onetime, allowing them to be able to follow there is one in a much easier way of learning. So, now, look into the following image and see the difference.

So, if you look into this image here it shows therefore, that we have removed the image of Thomas Edison it only remains the image of a bulb and its parts. So, in this case it becomes much more easier for the learner to be able to follow because you can be able to see that its it is much more (Refer Time: 08:55) and less information and less graphics which makes it easier for the learner to be able to follow the lesson. So, and this enhances the ability to be able to learn better which implies therefore, that cognitive load or your cognitive processes are not overloaded by the information of the graphics that is put and this is how coherence principle actually works.

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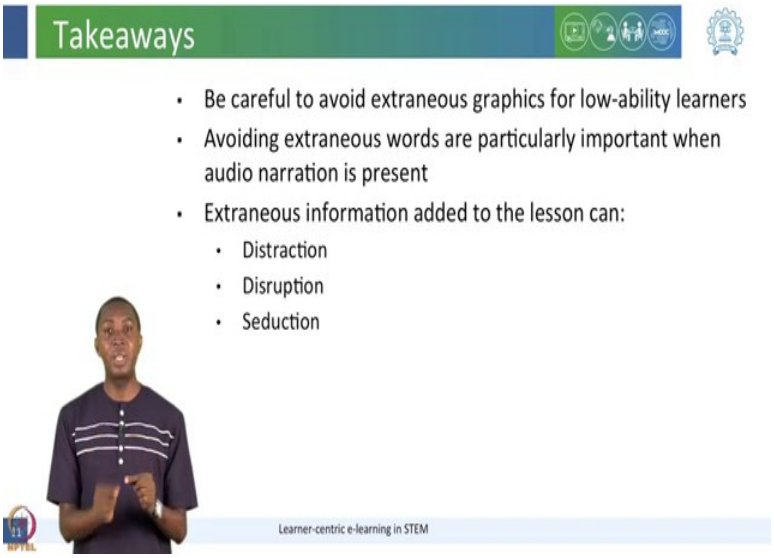

Now, these are the takeaways from this particular coherence principle. So, in all cases whenever you are creating your content you are creating e-learning content for your students or for many applications. Remember, always to be able to avoid extraneous information into that content, but do not involve a too much of graphics in your content, do not involve too much of words and text into a graphic into your content, do not involve too much of sounds or background music into your content because all these can be able to overload, your memory, your working memory which implies therefore, that learning may be affect in a process.

So, always remember to avoid these information that you are putting and always remember to make sure that you are not including any unnecessarily material because the principle of coherence says that use less materials for better learning. And therefore, avoiding all these materials or content that you add, enhances your learning for your students and this makes it much more easier for them to be able to understand the content easier.

So, generally, whenever we are adding these contents extra materials we could be able to see that first of all it brings distraction to your students they are not concentrating on the content and therefore, they have to switch here and there looking to all the information that is put on that particular image. But again these extra information that we are putting may be distracting in a way that your students may not be able to learn better or build appropriate connections to the previous knowledge to the current knowledge.

And therefore, in such a way in such cases try to avoid these extraneous materials as much as possible, then again in some cases these contents that we are adding as extraneous materials may also bring about the (Refer Time: 10:52) seduction which is something that is priming inappropriate existing knowledge by your student bringing them to be able to connect to what they are actually seeing.

For instance, when you see that image of a bulb students could start thinking of other things that are not connected to this content and therefore, making it much more complicated for them to be able to learn and connect toward the actual learning in this process or in this lesson that is existing at this particle time.

That is all about this lesson. In the next lesson, we are also going to discuss about other principles like segmenting principle and also personalization principle.