

Digital Self-Instruction Materials Types Development and Challenges in Their Development and Use

Ms. Sneha Prabha¹, Prof. Vandana Goswami²

¹Ph.D Scholar Department of Education Banasthali Vidyapith

²Dean Department of Education Banasthali Vidyapith

Abstract

Digital self-instructional material is the need of the present time and the foundation of the education world of the future. It contains many types of learning materials such as animated movies, image-audio presentations, digital program learning materials, comic strips, info-graphics, digital books, etc. This material is created keeping in mind the different types of people i.e. their disability, specialty or need, so that the same learning material is beneficial for maximum people, it demands a lot of hard work. The more interesting these learning materials are, the more effort is required in making them and the more obstacles we face in the path of making them. After overcoming all of obstacles, the learning material presented is very beneficial for everyone. But there are many problems in the way of full use of digital self-instruction material, due to which it is not proving to be as beneficial as it actually is.

Keywords: Digital self-instructional material, Instructional Materials, Educational Technology, Multimedia Resources, Online Education

INTRODUCTION

Students can have self-regulated learning (SRL) by using online learning platforms effectively and achieving learning goals (Winne, 1998). At present, online learning material is considered to be an excellent means of teaching and learning. We can say digital self-instruction material is emerging as the most useful teaching-learning material in the field of education. It is being used successfully at all levels, from pre-primary level to higher education level. It is being used not only for competitive examinations but also to make ordinary classes more interesting and more useful. It has not only brought changes in the method of teaching-learning but it is also creating a new revolution in the field of education every day. Digital self-instructional material refers to those instructional techniques which are available digitally which we can read, watch, listen and after all learn something online or offline through mobile, laptop, computer or any this type of digital equipment. Through these self-instruction materials, learners can acquire knowledge whenever they want. Initially, only word format appeared in these digital self-instruction materials, but as a result of daily new discoveries and changes in teaching-learning methods and techniques, many types of digital learning materials appear before us.

Digital self-instructional material

Digital self-instructional materials are also particularly beneficial for students with special needs. Since

many students have visual or hearing or multiple disabilities, they require special types of learning materials. So that they can continue their learning in any situation. Keeping in mind the needs of such students, learning materials are prepared according to some special techniques. Such as use of large font for the partially blind, use of Braille script and use of sound for the completely blind, use of sign language for the deaf and mute, etc. If we use sign language in any simple digital self-instruction material, then this material will also prove useful for hearing disabled students. Again, if there is sound in this learning material then the visually impaired will be able to take more advantage of it. Also, with the help of special digital materials coming for them, they can also write something by typing in it. In this way these digital self-instruction materials can be made beneficial for all types of students. Initially digital self-instructional material was available only in the form of Word format or in the form of digital book, but as a result of daily new discoveries and changes in teaching-learning methods and procedures, many types of digital learning materials come before us.

Types of digital self learning material

Following are the types of digital self learning material:

- 1. Digital Book-** Digital books have been around since the dawn of digitization. By bringing books in digital format, it has become accessible to everyone. Even people living in remote areas can access it from anywhere. Digital books are written in Word format. Or sometimes by taking a photo of each page of a book, it is given the form of a digital book which can be easily read even by a person living anywhere. Sometimes it is free for the reader or he has to pay only for the data and sometimes some fee has to be paid for it. Many times the author or publisher of the book gets paid for it, otherwise at least he gets the credit for being read by so many people. Sometimes digital books also have the facility to listen to it. So that it will prove helpful for those who are visually handicapped or who just want to listen to the study material due to lack of time or any other reason.
- 2. Animated Movie-** An animated movie is a video that simulates movement using a series of drawings, computer graphics, or photographs of inanimate objects. As we all know, learning by watching is more effective than learning by just reading or listening. Through this, even the most difficult subject matter can be presented in an interesting and well-defined manner. In this way, if the study material is presented in the form of animated movies, then students will be able to study through it whenever they want, as per their time. This method proves beneficial for everyone from pre-primary level to higher education students. Animated movies are generally beneficial for all students, but if sign language is used in them, it will prove to be especially beneficial for hearing impaired students also. This will further increase its capabilities.
- 3. Image-Audio Presentation-** In image-audio presentation, a power point presentation or some images have a voice over related to that text or image. While using this medium, if the teacher or content developer wants, he can add his picture or his video doing voice over along with this content. Its advantage is that the learners get an environment to study from their teacher sitting at home. Like animated movies, sign language can also be used in it to make it more useful. Due to this, any kind of disability of the person will not come in the way of learning through this medium.
- 4. Digital Program Learning Material-** It is created by coding. There are many options in it which make this study material very interesting and interactive. This requires expertise in coding. The better the creator is proficient in coding, the better and interactive study material he will be able to create. In this study material, the subject matter is written by dividing it into small steps just like

program learning. In every item where there is a blank space, there is an option to submit the correct answer so that students get adequate feedback on getting the right or wrong answer. If the answer is correct then correct should be written and if the answer is wrong then along with writing incorrect, the correct answer should also be written there so that the student can know his mistake and the correct answer. Apart from this, students also get feedback as to how many correct or wrong answers they gave. So that they can know how much they have learned? Again, some kind of coding is done in this digital program learning material, through which by clicking on the given previous and next icons, we can go to the previous and next page respectively.

5. **Comic Strip-** Comic strip is another medium of teaching-learning. As we all know, everyone from children to adults like reading comic strips. However, the type, content, design of their comic strip, everything varies according to their age and their psychological, educational needs. Comic strip can be used for teaching-learning of school and university level students. Through this medium, any information is presented to the students in the form of stories. In this, comic characters are created as per the interest of the students which are suitable for them and then the necessary information is provided in an exciting manner using pictures, expressions and words. If audio is also included in this comic strip, it proves helpful for the visually impaired also. If audio is included in this comic strip, it proves helpful for the visually impaired also.
6. **Educational Info graphics-** Educational info graphics are a way of presenting information and data visually. In this, we can present information and data in the best way through pictures, figures, charts and graphs. It can be made even more useful by including a link to some content. Like other digital self-instructional materials, voice can also be inserted in it so that all the information in the info graphics can be obtained just by listening. This will be more useful not only for the disabled but also for the ordinary students.
7. **Live/ Demonstration Video-** In live/demonstration video, a teacher or knowledge provider can record a lecture on a topic or the entire class can be recorded and saved for future use. Additionally, it can be used for teaching-learning in hybrid mode. So that students who are unable to come to class due to any reason can also get education. Sign language can also be used in this type of video so that hearing impaired people can also take maximum advantage of it. Such teaching-learning method was widely adopted by various educational institutions since the Corona period and also became quite popular.

Development of digital self learning material

Creation of digital self-instructional material takes place in several stages. In creating any digital self-instructional material, the first thing to be kept in mind is what is the subject matter? For whom is it being built? There is a need to keep in mind the psychological level, intellectual level, characteristics etc. of those for whom it will be used. After that, content analysis is done. Along with content analysis, it is determined as to what type of digital self-instruction material the provided content should be converted into? Because it has to be molded according to the type of learning material in which it is to be transformed. For example, if it has to be made into programmed instructional material, then the content will have to be divided into small steps. It has to be converted into teaching, testing and practice frames. At the same time, care has to be taken to provide appropriate stimulus, response and reinforcement with all frames. Also, when converting it digitally, the color of the page, the color of the letters, bolding them as per requirement, coloring the teaching, practice and test frames differently, so

that it looks more attractive and proves to be more and more beneficial, all this keep in mind. Again, if the digital self-instruction material is to be made in the form of an animated video, then it will have to be changed in the form of dialogues, background music or background voice as required. All this requires expertise in animation, motion graphics, etc. Also, to make an animated movie, someone expert in this field is required. Creating a comic strip also requires creation of characters and writing dialogues. Creating a comic strip also requires creation of characters and writing dialogues. Creating image-audio presentation or multimedia based presentation also requires creating Power Point presentation and voice over. In this way, whatever type of digital self-instruction material is to be created, every kind of effort is required and the more interesting and informative the content is to be created, the more effort is required.

We can preserve digital self-instruction material for a long time. Apart from keeping it in the memory of digital devices like mobile phone, laptop, computer etc., it can be saved in pen drive. It can be uploaded to Google Drive. It can be shared easily. Many self-instruction materials can be uploaded to YouTube and can be viewed from anywhere. These study materials can be produced simultaneously in multiple languages so that everyone in the world can benefit.

Challenges in the way of creation and use of digital self-instruction material

The more interesting the digital self-instruction material is, the more effort is required in its creation and use. In its construction, the builder needs technical knowledge, subject matter knowledge, language knowledge as well as a lot of willpower, time and patience. As we all know that creating different types of digital self-instructional materials requires mastery of different disciplines, different obstacles also arise in this path. At the same time, even when we overcome all the obstacles and finally create a good digital self-instructional material, we still have to face a lot of difficulties at various levels while using it. Some of the obstacles coming in the way of creation and use of digital self-instruction material are as follows-

1. In the production of animated movies, after creating the content, the most important requirement is for animation and motion graphics experts, who can present the content in the form of an animated video. Only the person who is an expert in this technology will be able to do this work. If the builder himself is familiar with this method, then he will not have to face much trouble, but if he wants to get this work done by someone else, then he will have to pay money for it, along with this he will have to co-ordinate from time to time. If sound is included in the animated video, then a good voice over is also required who is well aware of the class level student for which the study material is being made. Besides, he should also have a good command over language and language style. It is also necessary for the environment to be quiet to avoid unwanted noise while recording the voice. If sign language is to be used in the video, then its expert will also be required. And the biggest thing is that the wider scale it has to be made or the more features that have to be included in an animated movie, either the producer himself should be adept in all of them or the producer should have a good coordination between people who are experts in animation, dialogue writing and sign language. This is a challenging task in itself.
2. Similarly, if any study material is to be prepared through coding, then a coding expert is required. Preparing study material through coding is also a very careful task in which all the nuances should be kept in mind and proper instructions should be given. The more features to be included in such content, the more time it will take to create it.

3. Good technical knowledge of creating info graphics or other text or word based study material is essential for creating a good digital self-instructional material. It is also necessary to have knowledge of this in order to hyperlink it as per requirement and also, if the document is made in such a way that the hyperlink can be opened even when offline, then it can prove to be even better. But to do this, a separate file has to be created which takes a lot of time.
4. The biggest obstacle faced at present in the way of using digital self-instruction material is that most of the people or students still do not have any digital medium like mobile, laptop, computer etc. Students studying in government schools, especially those from rural areas, are completely lacking in these resources. So it is obvious that if someone does not have these resources available then how he will be able to use the digital self-instruction material.
5. At present, under various projects, measures have been taken to ensure availability of computers and computer literacy in all government schools, but in reality, if we look at the ground level, many such schools and students are still deprived of it. The reason for this is not taking care of the computer or not having enough funds for it. Many schools have computers but most of them have some defect due to which they are not used by the students. That is, in simple words we can say that there is still a lack of digital literacy among many students. Or even if they are digitally literate, the school is not fully prepared to use digital self-instruction materials.

Thus we see that the better the digital self-instruction material is for watching, listening and studying, the more difficulties the creator has to face in creating it. After spending all the time, hard work, patience and expenses of the creator and sometimes after the combined efforts of many people, delivering the learning material to its user or being used by the user is also a success in itself. It is a big challenge. Because at present the students living in remote areas who really need it do not have adequate means to study with this learning material. They may not be digitally competent enough to learn on their own through digital self-instruction material.

Conclusion

Hence, we learned that digital self-instruction material is available before us in various forms like animated movies, image-audio presentation, digital program learning material, comic strip, info graphics, digital book, demonstration/live video etc which is capable of reaching every student of the world and educating them in an interesting way. Its construction is a complex task in itself and either it requires the cooperation of many people or a single person needs to be skilled in many disciplines. Both these tasks are quite difficult. Despite all these problems, digital self-instruction materials are being prepared in abundance. Despite this, as much as it is available in many forms and is ready to reach every home in an interesting manner to educate everyone, satisfy everyone's curiosities and enhance knowledge, its benefits are not reaching everyone. The reason for this is, on one hand, the availability of suitable experts, more time and more labour required for its construction, and the more well thought out it is to construct it, the more it will cost. After all this, even if digital self-instruction material is created, it is still not easy for everyone to use it. Because the availability of digital resources and its full use is still not easy for everyone. Despite all this, we see that in the last several decades, there has been an increase in digitalization and the use and discovery of new tools. Along with all this, various genres are emerging in digital self-instruction material which points towards its bright future.

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