

Planning Digital Learning for K-12 classroom

Ravi is a grade VII student. Recently, his school got interactive whiteboards installed in the classroom. He was very excited about the Science class last Monday, which was the first class to use the smart-board. The teacher started the class by showing a series of pictures, which were a slightly better version of what were in the chapter. Then she showed a video of a teacher who was explaining what was written in the book. Class was over and Ravi was very disappointed. He was not sure what he was expecting, but he definitely expected something more.

The problem stated above is common. Technology is used without much thought about the delivery style or method.



Digital learning for K-12 is both effective and efficient for the following reasons:

- **Wider Reach**

A larger number of students can access and benefit from the content and therefore have an opportunity to learn.

- **Analytics Driven**
Allows the system to gather, track and analyze the effectiveness of the learning content and the learning curve of the learner.
- **Adaptability**
The content can be reused and accessed by different learner groups who wish to learn at their own pace.
- **Accessibility**
Address the problem of making learning material available to all learners including those with disabilities.

However, it is important to understand the suitability of digital learning to a particular context. It is not advisable to attempt to digitize everything in the name of technology-aided learning.

A learning program needs to consider 3 things that impact learning:

- What is the desired outcome of the learning process? (Learning Objective)
- How should the teacher engage with the learner? (Instructional Method)
- What mechanisms should be used for effective engagement? (Delivery Method)

When planning digital learning, we need to ask the question: does the learning objective lend itself to a technology-aided delivery? If it does, what instructional methods are effective for the learners and instructors involved?

Learning Objectives

Any learning program aims to develop the following three types of skills:

- **Cognitive skills**
Cognitive skills involve conscious mental activities such as thinking, understanding and learning, remembering and applying methods in new situations to solve problems.
- **Interpersonal skills**
Interpersonal skills are skills that help an individual interact with others, individually and in groups, such as active listening, presenting, negotiating, etc.
- **Psychomotor skills**
Psychomotor skills relate to motor action directly proceeding from the mental activity, like throwing a ball, drawing, driving, etc.

Learning objectives are designed around these skills, in addition to the learning topic under consideration. A specific learning objective will require specific instructional and delivery method choices.

For instance, Lucy a science teacher would like to demonstrate the principle of centripetal force to grade V students. In order to be the teaching effective and helpful she should keep Learning Objective, Instructional Method and Delivery Method at the back of her mind before designing the course.

Learning Objective: "Demonstrate the Principle of Centripetal Force"

Instructional Method: "Descriptive Method" which would aim at students to listen/read/observe and assimilate the concept.

Delivery Method: "Interactive Presentation" which aims at using text, images, audio, video/animations and practice (i.e. questions and feedback).

Instructional Methods

The design of an e-learning course for K-12 involves using a combination of the following instructional methods:

- **Descriptive Methods**
Descriptive methods require learners to listen, read or observe. It emphasizes absorption of new information. Descriptive methods are comprised of presentations, case studies, worked examples and demonstrations. It facilitates the conceptual and factual knowledge acquisition, orientation, motivation, and attitudinal change.
- **Applied Methods**
Applied methods enable the learners to engage in practical, often hands-on activities. These can range from simple exercises to complex methods like simulation or research activities. Applied methods consist of demonstrations, job aids, case-based or scenario-based exercises, role-play, simulations and games, etc.
- **Concerted Methods**
Concerted methods focus on the social dimension of learning and engage learners in sharing knowledge and performing tasks in a collaborative way. They add a social dimension to the learning experience. It includes online-guided discussions, collaborative work and peer tutoring.

Delivery Methods

Here are some common delivery methods:

Presentations: Information on a specific topic is organized into a simple learning resource that could comprise of a document or a power-point presentation. These can be developed quickly and are useful for passive learning without any interactivity.

The applicable use case would be a lecture in the class.



High level Design for Presentations

Simulations: This is used to develop a deep understanding of complex systems. Digital learning games involve a competitive component that has a challenge with a set of rules and constraints. These are highly interactive and should be used where the learners are required to practice high cognitive performance levels.

One of the applicable use cases is to “Learn & Simulate the concept of Brownian Motion”



High-level Design for Simulations & Games

Collaboration: This method should be used where the learners are required to express their knowledge through discussion, negotiation, debate or extempore. It requires active support of a moderator to provide help and moderation during the process.

An applicable use case is [Model United Nations](#) a competition that is organized to foster collaborative learning.



High-level Design for Collaboration

Conclusion

The reason Ravi was dissatisfied with the overall experience was because he was expecting much more engaging content – content much different from otherwise boring textbooks. When the technology delivered the same content as the book, he was disappointed. Clearly, content publisher thought that digitizing content is enough to create digital learning in this case.

The efficacy of a learning objective is dependent on the Instructional and Delivery Method. At times the learning objective fails to deliver the intended outcome not because of the learning content but because of inappropriate choice of instructional and delivery method.

For instance with Learning Objective to “Teach Music” if we choose “Simple Learning Methods” as a Delivery Method it would be an inappropriate choice since this method depends on using docs and power-point presentations etc.

Hence, it is important to employ the use of a suitable instructional & delivery method for the effectiveness of a learning objective.

In forthcoming posts, we will get into more details and discuss the nuances of delivery methods and the design of digital learning.

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