

# POWER POINT: ISTRUCTIONAL DESIGN AND THE ROLE IN TEACHING AND LEARNING

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## ABSTRACT

Instructional design is undoubtedly an important part of a teaching learning process. An integration between the teacher and the tools maximize the learning impact of the process. Several characteristics of a good instructional design are considered essential in achieving desired goals. In order to construct such instrument certain steps such as Analyze, Design, Develop, Implement, and Evaluate should be followed. Internal process of learning should also be considered so that the information effectively reached the desired outcome. In First Aid block, a PowerPoint Presentation was chosen because of its versatility to accommodate various type of modality in instructional design.

**Keyword:** Instructional design, powepoint, lecture, , teaching learning

## ABSTRAK

Media pembelajaran tidak dapat dipungkiri memainkan peranan penting dalam proses belajar. Integrasi antara dosen dan materi akan memaksimalkan efek pembelajaran. Beberapa karakteristik dari media pembelajaran yang baik dianggap sangat penting untuk mencapai tujuan yang diinginkan. Dalam rangka mengembangkan media tersebut, langkah-langkah Analisis, Desain, Develop, Implementasi dan Evaluasi haruslah diikuti. Proses pembelajaran internal juga harus dipertimbangkan agar informasi dapat secara efektif mencapai hasil yang diinginkan. Dalam Blok Pertolongan Pertama, presentasi dengan PowerPoint dipilih karena kefleksibelannya dalam mengakomodasi berbagai modalitas media pembelajaran.

**Kata Kunci:** Media pembelajaran, powerpoint, kuliah, proses belajar

Describing instructional design in a lecture cannot be separated from the lecture itself. Instructional design should play its crucial role in supporting the effectiveness of a lecture. How the material brought by the lecture together will help the student to learn better. The lecturer together with the slide presentations should work toward providing interesting and clear

explanation. Both characteristics are valued by students (Brown 2009). Nevertheless, another study also found that customizing instructional design in accordance to students' learning style did not give significant improvement in students' performance (Papanagnou 2016)

Instructional design in general is a process that help facilitating learning to

happen (Stewart 2009) The core elements of instructional Design consist of Analyze, Design, Develop, Implement, Evaluate approaches (ADDIE). The desired instructional design comprises following characteristics such as: learner centered, goal oriented, focused on real-life performance, focuses on valid and reliable measurable outcome. A media itself is an aid in the transfer of information from a sender to a receiver (Pettersson 1989). Media has attributes which are particular properties owned by media which can be exploited to facilitate learning (Prihatiningsih 2007). From media types that are considered to have much benefit in medical education as described by Prihatiningsih (2007), power point presentation comprises the benefits of OHP transparency, slides, and video. Teacher has the complete control of what to be displayed since it customized for step-by-step disclosure. This will facilitate the cognitive process of producing attention, selective perception, semantic encoding, and retrieval. Teacher may combine text and picture to enhance the communication process. Picture, photo or microscopic slide can be presented. Careful selection should be done to avoid stuffing too many pictures that will distract the main information. Sounds can also be use to support the pictures.

Video can also be embedded in power point to describe an abstract concept, or a complicated procedure or pathogenesis. The flexibility of play-pause-fast forward-rewind can be used to facilitate thinking process by including other activities or discussion.

The educational material used in the First Aid lecture, the power point presentation, might have substantial effect of student learning experience. But when it is used too much, it can deteriorate and distracts learning. The most common error is overcrowded slides, irrelevant or unprepared handout, and incompatible multimedia equipment. (Farrow 2003)

Teacher concept of teaching can be grouped into transmissive and facilitative teaching. The transmissive group focuses on content, while facilitative teachers focuses on students. In an outcome based curriculum that implied in Indonesia Curriculum that focus on what students understand rather than just pure knowledge, teachers' role shifts from merely cover topics, to helping facilitate learning. Teacher goes further beyond helping "construction" of knowledge, to assist student to reconstruct themselves as a person who learn. (Light and Cox 2001). According to Bligh (2001), students understand a simple presentation that consists of concepts rather than too many details. A

good presentation consists of concepts and key points. A diagram or a picture may represent many words. These principles are the base of creating the First Aid power point presentation.

First Aid lecture is designed in line with Gagne's principles of instructional design (Gagne 1985) which consist of: Gaining attention, informing the objectives, stimulating previous learning, presenting stimulus material, providing learning guidance, eliciting performance, providing feedback on performance, assessing performance, and enhancing retention. Attention was gained through an eye-catching picture at the beginning of the slides. The variation of activities benefits the students because it renews their attention, generate interest, provide opportunities for student to think and obtain feedback for their understanding. It is also train students to do an academic discussion with their peer, something that they will do frequently in the PBL tutorial session, and their real life as a doctor. Activity should be used wisely because there will always be a possibility for the class to become buzzed and unfocused. Therefore a discussion to the answer is a powerful tool to regain the class attention and move on. The usage of analogies, examples, cases and metaphors bring better learning experience to the

student. In the later part of the First Aid presentation, a case is used. This case, although it cannot represent the students' understanding of the whole presentation, brings students to a simulation to deal with a patient. A simple case is brought up, and students work in group trying to solve the problem.

Meanwhile, viewing from the internal process of learning as described by Gagne (1985) it can be summarized into some brief points, as follow: attention, retrieval, response organization, control process, and expectancies. Each point can be facilitated during the lecture. Attention that is made will produce arousal and interest. Selective perception can be obtained by using different color for different group item. Algorithm aids the retrieval. How student organizes the response is affected by the objectives that are set by lecturer. The process is controlled to a desired goal by a set of strategy that employed throughout the lecture. Outcomes that are expected from students are clearly stated at the beginning and at the end of lecture. It should help learners to make sense of the material they are working through by giving them, at the start, some idea or 'map' of the ground they are going to cover, and by clarifying any key concepts they will need to use to anchor

the sense they make of the material (Atkins 1995)

Clear explanations, as demanded by student are essential in lecture. The structure of a lecture that clearly defines sign-posts, frames, foci, and links is very helpful. Sign-post indicates structure of a lecture. It usually put at the beginning of the slides in form of learning objectives. Frames separate sections in a lecture. In First Aid power point frames are separated by empty slide with a big question mark figure. This slide besides act as transitional slide, also give opportunity to students to clarify previously-finished section. Foci explain the key points of an explanation. A different font or color is used. The lecturer should always state the link between issues which are explained. The link in this presentation is maintained between steps explained. Interactivity is important throughout the lecture to keep the student engaged. Whiteboard can be useful to facilitate this. In some slide, before the slide appears, lecturer may post a question to the students. This give them time to do brainstorming and express their idea based on previous knowledge. Besides engagement, lecturer takes benefit from this action, since it gives information what knowledge students already have. This will be a useful hint to go through the rest of the lecture. It should be noted

that during writing on the board, a lecturer should not talk simultaneously. It will be difficult for the students to hear clearly when lecturer talks while backing them. The general principle of simplicity is also applied here that only key points are written, not the whole essay of the talk. Using different marker color, same as the power points, help to emphasize. But, even the most interactive and interesting lecture if given continuously; at some points will become boring. This is not the fault of the lecturer, but the nature of human itself. Attention in lecture declines after 20 minutes (Brown 2009). Therefore the lecture should be created to accommodate breaks or switch the focus of the lecture. An eye-catching picture of a car crash is used. Car figure is used to contrast the focus of previous slides which contain human body figures. A danger sign and exclamation mark with contrast color is displayed to re-focus students, and at the same time emphasize the importance of safety issue.

The general mnemonic LIGHT (Farrow 2009) can be applied to this power point presentation. It is an abbreviation of Links, Intelligibility, General style, Highlighting, and Targeting. Links talks about direct relation to between lecture and slide presentation, each slide is customized to support the talk in the lecture. Intelligibility means that the

slides should be easily understood. It should be simple and readable. A diagram or a chart may be helpful to explain complicated concepts. Each slide should be limited to one main concept only. General style ensures the usage of consistent font throughout the presentations. It helps student focuses on the learning and the content, not on appearance of the slides. Highlighting means to stress or emphasize on important issue. Practically it can be done by changing the font size and color of the point. In this presentation, an example of important key point that student should grasp is the safety of the first aider. Therefore at the beginning of the slide, this point is emphasized by using big, bold, and underlined font. It also uses command mark icon to further stress its importance. Targeting concerns with the fact that the educational event and the teaching material supporting it, are in line with what student need to learn. Therefore lecturer should aware of student level of knowledge. Giving a series of lectures to a group of student will be easier because lecturer will be able to monitor the progress of students and give appropriate material. In Faculty of Medicine, where a single lecture is a part of a big picture of a curriculum, the learning objectives of each lecture are pre-determined when the curriculum

was built. Lectures are given in a block, and the learning objectives are stated in the block book. Lecturer should always refer to the learning objectives when composing his/her lecture since it will be very helpful for the student to learn if there is a consistency between the block book, the lectures given, and the assessment.

The use of analogies and metaphors will create connection with currently existing long term memory. A picture of a famous car racer is posed at the beginning as an opening of the interactive lecture. This picture will be an introducer of an emergency condition. It will bridge student previous knowledge of popular issue with medical problems that might arise during those conditions. It is assumed that all students have ever watched a car race before. A brainstorming session will probe the student to share possibilities that might happen during a race that will lead to emergency issue during accident. They need to connect learning to their knowledge or experience (Knowles 1973). This will be a good entry point to start with and it also send a message to the student that the material that they will be studying is material that is applicable to daily life. Awareness of importance and applicability of a subject help student learn because as adult learners, they

are relevancy-oriented (Knowles 1973). They must see a reason for learning something. Learning has to be applicable to their future work or other responsibilities to be of value to them. (Knowles 1973). A simple photoshop edit was done to the racer and "First Aid" was placed replacing the original text. This again is used to inform student that first aid is a generally a medically-lay-person competencies, therefore mastery is compulsory for medical student who will become a doctor.

In alternation between slide, teacher should gives student adequate time to digest the content of the slides. When text or diagram or picture appears teachers should not talk or explain simultaneously. Give a pause to let student digest the content and try to analyze relationship between slides. Talking simultaneously at the beginning of the slide appearance might distract students. They may either only listening to the lecturer, and not pay attention to the slide; or more frequently they will look at the slide or paying no attention to the teacher. This kind of situation should be avoided since both information are important to the students.

When delivering material lecturer should focus on the student. A lecture session can be well designed, if we understand the learning process. A deep learning

approach, that try to understand the concept, the true meanings of facts, is facilitated. Teacher suggest student to build their knowledge, based on their previous knowledge, and aiming at future relevance of the knowledge. Lack of understanding concepts and principles, hinder student advancement in reasoning and critical thinking. Therefore it is important for teacher to explain about concepts during lecturing session. In the power point, the main concepts are presented with adequate explanation. Concept itself is a classification of facts or diverse phenomenon, meanwhile principles builds bridge between concepts, so that we can predict an outcome. To understand and to differentiate these are important for lecturer. By giving principles and concepts, students are assisted to be able to give a proper response in different but typical situation. By understanding principles and concept, student would likely able to predict outcome, and apply it to practice. A good power point presentation slides will aid a lecture in transmitting the idea given. But caution should always be made that the main focus is on the lecturer not the power point.

Laser pointer is a powerful additional tool to focus, emphasize on certain object, and control the student. It will guide the attention of students to points

which are considered important. Too much pointing will make the lecturer facing his back on students; therefore, a lecturer should only choose very important ones.

As a presenter, the ability to form a structured and interactive presentation is the key to success (Emilia 2007). There are 10 basic steps in preparing a power point presentation

- Determining presentation scheme
- Choosing lay out
- Choosing fonts
- Choosing font sizes
- Choosing ordinary non capital font
- Assuring color combination
- Attaching pictures and illustration
- Applying effects
- Prepare back up
- Rehearsal

A topic, learning objectives and lecture scheme are set in a draft prior to making the power point presentation. The draft also contain the text, presentation technique and possible interaction sequences. The draft will lead presenter to a more structured presentation scheme. The order of the slide might be changed according to logical thinking process. And then some questions can be post such as the need of picture, graphic, illustration, table, or even a

multimedia to support the material. It has to be made sure that the usage of these modality, enhance the learning process, not hindering them.

Lay out and design of the slide determined at the beginning of the process and and can be edited along the the process. But a caution should be made since changing the slide design or lay out after the text is written may affect the whole slide. The previously written text may situated at the area which is hard to be read due to the overlapping of the color. It can be prevented by keep on rechecking the slides.

Clear and readable are the simple criteria for fonts. Basically ther are two font types, Sans serif and Serif. Serif fonts such as Times New Romans have tails at the end of the letters as a decoration. This kind of font is ideal for printted material since it help the eyes to trace the letters. But, in projected letters, that is not the case. The thick and thin variation makes the letter hard to be read (Emilia 2007). Serif font such as Arial has identical thickness throughout he fonts, therefore it is easier to be read and used as projected presentation font. In a same slide, maximum two types of font can be use, i.e. for the title and the body text. In the First Aid presentation, Arial font is used. Font sizes are room dependent. The minimum size that can be read clearly

from 5 meter is 24. Simple guidance can be used that if the room is more than 20 meter in length, then, 42 and 36 are used for title and text respectively. If it is between 10-15 meter; 36 and 28. If 5-10 meter; 32 and 24. First Aid is presented in a 12 meter long room and dominantly fonts larger than 28 are used.

There is a general “Six Rule” that has to be considered (Emilia 2007). It says that in a single slide it should exceed six lines and six words in each line. Farrow (2009) suggests 8-12 lines per slide. All these rules help students to read the slide more easily. Though both rules are majorly applied in First Aid slides there are some exceptions. Some slides consist of seven lines which will make the slide exaggerates in number if it is separated in two slides. Moreover, it will help to group one topic in one slide when possible, so it will be more easily understood. Capital letter should not be used excessively. The reason is that human eyes identify letters from their half-upper part (Emilia 2007). Capital letters generally have rectangle shapes which are relatively same, so it is harder to be read (Wheildon 1986), meanwhile in regular font the shape varies more.

Color setting is numerous in power point from default to customized ones. Color emphasizes main points, establishes connection between topics, differentiate

objects, attract, and pose a professional appearance. There are some considerations to be made when dealing with colors. The choices should be consistent and not exceeding four colors in each slide. A general cultural, psychological characteristics of color should be considered such as yellow for caution. In First Aid slides, yellow is used in extremely important issue or key steps. The background and text should be very contrast such as in the presentation, black fonts with white background. It is simple enough not to make the medium does not get in to the way of the message. The other consideration is how the colors appear when projected on the screen. It is not uncommon that the color projected is different from what we see in the computer monitor. In larger room, the color tends to be darker and vice versa (Emilia 2007). The First Aid is presented in a quite large room therefore the bright color will be buffered by the room effect to create a comfortable color. In the favor of cultural aspect, white color is associated with medical field. The target of the presentation is freshly graduated high-school students who are relatively new to the medical world. The lecture is situated at the first block in the first semester that contact directly with medical world. The “sense” of doctor and medical that white color represents



will create enthusiasm to learn the material.

Pictures and illustration can help student to understand the material better. There are ample sources of pictures that can be taken from clip art CD's or downloaded from the internet. The amount of picture in each slide should be determined and should not get in the way of the text. A picture displayed, should not always accompanied by full descriptive text, since the text can be narrated or explained better by the lecturer.

Animation can be applied to slides. It arrange the order of appearance o the slides. Animation can be applied during slide transition or in a single slide itself. It gives opportunity to disclose information step-by step with certain effect. Have to be kept in mind that the focus is understanding. If animation used in excess, it will distract students. The power point itself equipped with ample of animation, and millions of pictures which are ready in the internet should not be used only to demonstrate the technological literacy of the lecturer. If lecturer uses a complicated multimedia, or advanced format in power point presentation, one should b be well practiced and comfortable with the medium (Farrow 2003)

Having the presentation unable to be displayed is the most unwanted scenario

of every lecturer. With current development of software, the number of incompatibility increases. Preparing back-up is a wise strategy to overcome this problem. A lecturer may want to save their presentation in older software format which surely able to be opened by newer software. At the presentation day, the First aid power point is saved in Microsoft 2007 and also 2003. Identical files also stored in different flash disk storage in case the primary flash disk has problem. Currently storing the material online is also a good back-up alternative.

Rehearsal is important part of preparing lecture. As discussed above that power point is merely tool helping lecturer give lecture. The main "actor" is the lecture who is hoped to be able to collaborate the power point to support an interactive lecture session. The more practice, the better. Lecturer should be practicing several times. Each practice session of 40 minutes, equal 50 minutes of a real lecture.

A brief summary of the lecture is printed in lecture hand-out. One paged paper consists of key points of the lecture. It also enhances the interactivity of the lecture since it has abundant white space where students can add their own notes. The case used is also printed to ease discussion between students. To make all these possible, the hand-out

should be distributed before the lecture starts.

### Summary

Power point presentation as an instructional design has to be well-prepared to support the lecture. Several factors from educational philosophy

aspect, the technical aspect of power point, to the 'sense' of art should be put to consider. The goal is to effectively facilitate and trigger student learning. To do so, lecturer should be the focus and play the key role not ever let the power point "do" the presentation.

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