# An Innovative Cognitive Style of PowerPoint based Lectures Used as a Learning Tool for Medical Science Students

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***Abstract*—It's clear that students benefit from activities that focus their study time and help them draw connections between textual information and lecture content. Many faculty are reluctant to distribute handouts prior to class. Creative use of PowerPoint is well suited for student guidance of this sort and involve them in active learning. Student perceptions about using PowerPoint as effective handouts in learning Pathology was studied. The power point presentations with incomplete details were given to students prior to the day's lecture. Students were asked to work through the PowerPoint handouts as they read the textbook in preparation for the lecture, answering all questions and bringing their completed handouts to class. Questions based on the PowerPoint presentations were asked from the students in between the lectures. 32% of the students were not satisfied with this type teaching as they felt that mostly they had no time to read the topic from the books. Majority of them were motivated to read the book but because of time constrain they could not complete their reading.65% felt that it had been useful than other teaching methodology like problem based learning as they had some clue as what to study regarding the topic. 79% of the students mentioned that it helped them to integrate information and establish their understanding of various pieces of data. 81% felt that the Lecture PowerPoint's hand outs offered opportunities for learning by themselves by looking for missing information from the books. To 69% the exercise provided an atmosphere of challenge, and performing. When used appropriately, PowerPoint presentations can improve student learning by structuring study time, encouraging critical thinking, and providing opportunities for active learning during the course of the session. By PowerPoint presentations interventions the faculty can help students engage the material actively and efficiently before and during class.**

***Index Terms*—cognitive style, learning tool, PowerPoint presentation**

## I. Introduction

It's clear that students benefit from activities that focus their study time and help them draw connections between textual information and lecture content. PowerPoint handouts are well suited for student guidance of this sort. Many faculty members, however, are reluctant to distribute handouts of PowerPoint presentations prior to class for fear that students will see them as substitutes for lecture and fail to attend the actual session. Others balk at the idea of distributing handouts as students enter the lecture hall, worrying that students won't pay attention during class or that they will fail to develop good note taking skills. Providing verbatim copies of lecture presentations, the standard practice, may well encourage students to fall into these traps, suggesting that everything one needs to know is included in the handout.

When used appropriately, PowerPoint handouts can improve student learning by structuring study time, encouraging critical thinking, preparing students for lecture, and providing opportunities for active learning during the course of the session. By PowerPoint presentations interventions the faculty can help students engage the material actively and efficiently before and during class. By using the handout as a vehicle to ask questions or assign exercises, faculty can promote active participation.

## II. Aim & Objectives

To study the perception of students about using PowerPoint as an effective handout in learning Pathology in a Medical and a Health Sciences University.

## III. Material & Methods

A cross-sectional questionnaire based study was done. Student perceptions about using PowerPoint as effective handouts in learning Pathology was examined by using questions with a 5-point Likert scale in a Medical and a Health Sciences University. The power point presentations with incomplete details were given to students prior to the day's lecture. Students were asked to work through the power point handouts as they read the textbook in preparation for the lecture, answering all questions and bringing their completed handouts to class. Questions based on the power point presentations were asked from the students in between the lectures.

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**Case scenario:** A 57-year-old man presented to the emergency room with a history of **increasing abdominal girth, and vomiting blood**. Family members related that he had **consumed alcohol for many years, drinking up to 1 liter of liquor per day**. On the day of admission, he **vomited some blood**, followed by **increased confusion**. His **past medical history** was notable for unknown prior abdominal surgical procedures, for which **he received blood products**. The physical examination showed that the patient was a **cachectic** man who **appeared older than his stated age**. He had a **protuberant abdomen**. **And** he was jaundiced. **Small spider-like tangles of blood vessels were present over the skin of his neck and chest**. **Palpable breast tissue** was present. The cardiac examination was unremarkable. His **abdomen was protuberant with shifting dullness**, and his **spleen was palpable**. His **liver percussed to a span of 10 cm**. A few **large blood vessels** were noted in the **periumbilical area**. There was **bilateral pedal edema**. Neurologically, the patient was **oriented only to name**.On **voluntary dorsiflexion of his hands, a flapping motion** was noted.

**Learning objectives**

- Definition of cirrhosis
- Causes /classification
- Morphological changes
- Clinical presentations
- Complications

Sample of PowerPoint Handout for Students given to them before the class; they complete it along with faculty when they come to the class and participate in interactive lecture on the topic.

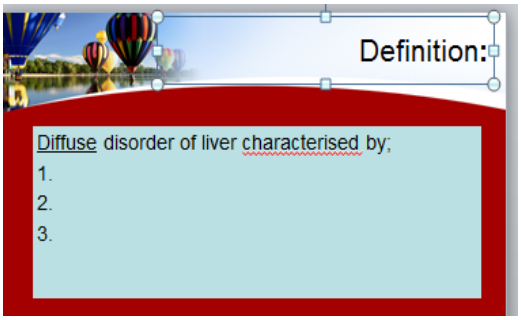


Figure 1. Example of incomplete power point presentation

TABLE I: QUESTIONNAIRE TO STUDY THE PERCEPTION OF STUDENTS ABOUT USING POWERPOINT AS AN EFFECTIVE HANDOUT IN LEARNING

| S. No | Questions | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|---|
| 1. | Did you struggle answering questions. | | | | | |
| 2. | It helped in building confidence in learning objectives. | | | | | |
| 3. | Increased your thinking processes | | | | | |
| 4. | Cultivated your interest in lecture topic | | | | | |
| 5. | Was greatly satisfied with this kind of teaching | | | | | |
| 6. | Motivated you to actively learn | | | | | |
| 7. | Not interested in this kind of teaching | | | | | |
| 8. | Any comments | | | | | |

**Statistical Tests:**

The yes or no responses were tabulated and analyzed for individual questions by descriptive statistics.

Second-year medical students are introduced to many new terms and concepts in a short time frame in the hematology system and the neoplasia section of the undergraduate pathology course. It is a challenge to provide adequate practice and necessary repetition to reinforce key concepts. To determine student perceptions of the usefulness of crosswords as a quick and effective way to reinforce essential concepts and vocabulary.

Crosswords with ensured content validity built on a free Internet resource were completed by the students in collaborative and cooperative groups of 6 to 7 with a reward for the first group to successfully complete the puzzle. Student perceptions of the value of crosswords for their learning were examined in 2003 (39 students) with a survey of yes or no responses and in 2004 (41 students) with a survey using questions with a 5-point Likert scale.

Many students (37 of 39 in 2003 and 24 of 41 in 2004) indicated that crosswords were useful and contributed to their learning. Specifically, crosswords were found to be useful for identifying key concepts and vocabulary and for their collaborative and competitive aspects. Written and informal comments indicated student enthusiasm for and a desire to participate in more of these exercises. Students have transferred this review strategy to other classes and the peer teachers have expressed an interest in it as an adjunct teaching tool.

The judicious use of crosswords was useful for near transfer content and provided an opportunity to discuss and recall essential concepts, think critically, and collaborate in small groups.

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## IV. Results

Our questionnaire was administered to 55 students of 2nd year MBBS, 22 students of 2nd year BDS and 23 students of 2nd year BSc Nursing. The age ranged between 18-23 years. Male: female ratio was 1.7: 1. 49% of them knew Arabic and English languages both. There nationalities were as follows-18% Emiratis,14.5% Pakistani's, 14% Iraqis, 12% Egyptians, 8% Indians, 5% Afghan/Bangladeshi/Kuwaiti /Tanzanian/ Syrian / Srilankan, 3% Palestinian, 1% Jordanian respectively. Rest did not mention their nationality. Regarding the views of the students regarding Incorporating power point-based lectures as an active learning in Pathology: 32% of the students were not satisfied with this type teaching as they felt that mostly they had no time to read the topic from the books.

Majority of them were motivated to read the book but because of time constrain they could not complete their reading. 65% felt that it had been useful than other teaching methodology like problem based learning as they had some clue as what to study regarding the topic.

## V. Discussions

Two distinct categories of teaching philosophy about which much has recently been written are teacher-centered and learner-centered instruction [1]. Knowles [2] refers to these as pedagogical (teacher-centered) and andragogical (learnercentered) instruction. Volumes of literature in the arena of teaching methods have been written [3]. These methods include lecture, case study, small group discussion, large group discussion, field work, and so on. The primary purpose of this study is to develop an appreciated awareness of how incomplete power-point can be used as an innovative tool in health professional education. To this aim, this study qualitatively investigates the experiences and perceptions of students who are given power-point based lecture as a teaching method. The study is conducted with a proposed readership of innovation in education and will be useful to those interested in the arena of teaching methodology. In leamer-centered pedagogy, the learner is thought to be at the heart of instruction. Instructional focus shifts from what the teacher knows to what students need to leam. In a leamer-centered environment, instruction is developed with learners' "heredity, experiences, perspective, backgrounds, talents, interests, capacities, and needs" in mind [4]. Leamer-centered pedagogy is also referred to in the literature as "meaning making," "active" instruction, "progressive," "constructivist," and "holistic" [5]. Four distinct groups: cognitive and metacognitive factors, motivational and affective factors, developmental and social factors, and individual differences factor.

Leamer-centered practitioners believe that true learning is in meaning making, that knowledge is constructed rather than received. The inclusive approach allows for the perspective that the learner's brain is both a receptacle into which information can be placed into memory and a place where meaning making occurs [6]. We are influenced still today by lectures that were delivered in the Middle East; Greek instruction was delivered in lecture format; and lecture was present in the mediaeval university [7]. Grubb argues that "good lectures" can be as constructive and leamer-centered as any other approach, not to mention that virtually mostly every faculty uses lecture as a teaching methodology [5].

Fact-intensive presentation is the most common lecture approach [5], which faculty represented in this study generally believe is the most efficient way to transmit large amounts of material to students. Students are expected to leam by exposure to the information, but a challenge exists in that it is unclear what learners actually do with this information - how do they retain it, apply it, or relate it to existing knowledge, for example?

Even supporters of lecture will admit that the traditional lecture is not necessarily effective in and of itself at promoting thinking (i.e., meaning-making) in the learner [8]. This presents a challenge for educational circles, as lecture is so broadly used in the higher education context, yet leamer-centered principles suggest that meaning-making is necessary for learning complex subject matter [9]. Our study correlated well with 'meaning making' learning.

The literature calls "meaning making" as the kind of learning that leamer-centered practitioners claims when the true learning occurs. Our study done by giving students incomplete power point presentations is also in accordance with the view point of Bruner [10], referring the process as "active interpretation or construal." Bain [6], refers to the process of meaning making as "information processed into knowledge." The American Psychological Association's Learner-Centered Principles [11] reference this process as "constructing meaning from information and experience," and Grubb [5] complements this view by inferring that "good" lectures are those that are "constructive" and "leamer-centered." Leamer centered practitioners refer to it as the construction of knowledge, rather than simply reception of knowledge. It is an active process, not a passive process.

Our innovative teaching methodology can be a part of 'Narrative', a meaning making tool [12], [13]. which demands a higher order of thinking on the part of the learner, while giving the learner the opportunity to construct meaning from information received. It also allows the learner to construct new knowledge by his or her connecting new information with existing knowledge [14]. McKeachie [15] suggests that a criterion of effective lecturing is that it "stimulates students to think about examples in their own experiences" and further recommends that college lecturers organize their lectures in such a way as to allow students to solve problems, rather than simply stating facts to justify instructors' statements.

To answer the question that how can lecture, traditionally thought of as a teacher-centered practice, be infused with leamer-centered principles? It was analyzed that when the incomplete power points were used as a component of lecture, it provided a new perspective and

approach to the use of lecture by blending it with leamer-centered principles.

## VI. Conclusions

When used appropriately, PowerPoint handouts can improve student learning by structuring study time, encouraging critical thinking, and providing opportunities for active learning during the course of the session. By PowerPoint presentations interventions the faculty can help students engage the material actively and efficiently before and during class.

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