

Power Point in Medical Education: The Interest of Hybrid Strategies to Pass from '' Passive Power Point '' to '' Active Power Point ''

Dr DhouhaBacha¹, Dr Lasaad Gharbi², Dr Ghofrane Talbi², Dr Wael Ferjaoui^{2*}, Dr Sana Ben Slama¹,
Dr Bouraoui Saadia¹

¹Department of Pathology, Mongi Slim University Hospital, Faculty of medicine of Tunis

²Department of General Surgery, Mongi Slim University Hospital, Faculty of medicine of Tunis



Abstract – Power point (PPT) software is used widely in education with nearly 250,000,000 PPT teachers daily worldwide [1]. It is an effective tool in medical education (especially in memorization and understanding); and is appreciated by teachers and learners [1]. However, despite the respect of the classic PPT teaching rules, it might be boring (and therefore demotivating) when the teacher is content to read only the slides. To avoid this pitfall, motivating strategies exist by creating the concept of "Action-Feedback-Interaction" (AFI). The description of these strategies is scattered in the literature in university pedagogy and is limited to one method in medical education called "Handout" [2].

The aim of this work is to describe these strategies through a review of the literature and the experience of the authors.

Keywords – Power Point, Medical Education, Hybrid Strategies, Passive Power Point, Active Power Point.

I. INTRODUCTION

Power point (PPT) software is used widely in education with nearly 250,000,000 PPT teachers daily worldwide [1]. It is an effective tool in medical education (especially in memorization and understanding); and is appreciated by teachers and learners [1]. However, despite the respect of the classic PPT teaching rules, it might be boring (and therefore demotivating) when the teacher is content to read only the slides. To avoid this pitfall, motivating strategies exist by creating the concept of "Action-Feedback-Interaction" (AFI). The description of these strategies is scattered in the literature in university pedagogy and is limited to one method in medical education called "Handout" [2].

The aim of this work is to describe these strategies through a review of the literature and the experience of the authors.

II. CLASSIC PPT RULES IN MEDICAL EDUCATION

The PPT has several slides. Each slide should not exceed 2 to 3 minutes [3]. The PP alternates text and non-text on its slides ". The "non-text" is as it is defined elsewhere [4]: it can be an image, a figure or any visual signal.

The respect of classic rules: '6/6 rule' for text and '1/3 rule' for image is mandatory.

According to the '6/6 rule'; you should include no more than six words per line and no more than six bullet points per slide. The goal is to keep your slide from being so dense and packed with information [5].

According to ‘the rule of 1/3’; you should place key graphic elements along lines which divide your image into thirds, or at the intersections of those lines [6].

The insertion of a video sequence is possible but must not exceed 4 to 5 minutes [7].

It is recommended to master the rules of verbal communication (tone, verbal flow, speech flow, intensity of voice) and non-verbal (eye contact, body movements especially of hands).

The respect of rules allows the PPT to follow the frame of the teacher's thoughts and not the opposite.

III. ADVANTAGE

The image is advantageously inserted in the PPT in medical education. Indeed, thanks to its Picture superiority effect (PSE) [4], the image transmits more messages in less time and space than text. The use of a color code is possible (red flags in the learning clinical reasoning (LCR) for example). Nevertheless, a good balance between text and image is mandatory [7].

The animation of the slides is the main advantage of PPT. It allows you to go from simple to complex and to illustrate the evolution in time and space (the case of sequential images for example).

Finally, it allows you to focus on part of the text or image and to make it more attractive and emphasizing.

IV. DISADVANTAGES

Studies comparing the PPT to another tool (blackboard, white board, transparent, internet, etc...) have shown the inferiority of PPT [8, 9, 10, and 11]. These studies are mainly concerned with the study of anatomy and physiology. They are based on the pre-test-post test comparison with a $P < 0.05$ [11]. In fact, it is a passive PPT in all of these studies. Students do not participate in teaching and there is no interaction between learners and teachers. It is, therefore, important to adopt strategies creating ‘AFI’ when teaching PPT. Indeed, active pedagogy has a beneficial effect on learners [12].

From all these studies, we can, then, conclude the importance to hybridizing the PPT to a 2nd method in order to improve medical education.

V. STRATEGIES

Strategies hybridizing the PPT with another tool must obey a preliminary script.

First, the PPT can be hybridized to a paper medium; this is the ‘Hand out’ method. In this case, a paper copy of the slides (but incomplete) is delivered to the learner. In the first situation, the text is incomplete (gap text) bringing the learner to active note taking. The missing words can be keywords thus bringing this method to key words based learning [13]. Elsewhere, only the illustrations of the slides are delivered to the learners and he is brought to complete the legend.

Then PP can be hybridized to the white board. In this case, the slides are projected on a white board and not on the usual screen. The advantage in this case is that the learner can complete an incomplete text, interpret an image or illustrate a text. During PPT-White board hybridization; 3 sequences must be observed: instruction-question-answer Key (fig.1).

In instruction, a mission is given to the learner: enumerate, explain, complete a gap text, interpret or draw a picture.

The question should provide an answer space where the learner could write on the whiteboard. Time for reflection is given to the learner. Several learners can take turns on the board for the same question, whether it is a text or image (in a pedagogical strategy of progressive drawing) [14]. Once the learner's answers are written in the dedicated space, the exact answers appear in the third bubble sequence without overlapping with the learner's answers. This visualization of the error and the correct answer facilitates a specific retro action redirecting knowledge. At the answer key time, links can be built with other knowledge (via analogy or comparison for example).

Finally, the PP can be hybridized to the internet / (‘e teaching’ / ‘e learning’). The PPT is widely used in ‘e Learning’ whether it is synchronous (webinar) or asynchronous (capsule videos).

The creation of ‘AFI’ depends little on PPT. On the other hand, ‘AFI’ in just in time teaching is, essentially, via PPT [15]. In this case, the teacher first sends exercises via PPT (with empty slides for the answers), receives the answers and then analyzes them so that the teaching is just in time teaching (Warm up exercises). Therefore, we can consider this method as an elaborate form of the flipped classroom (fig.2).

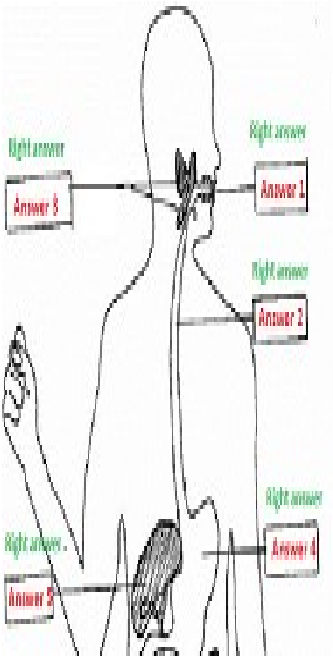
Instruction: To write, Draw, Complete a legend... <u>Example:</u>	Question: Missing text, Image without caption, Schema to be completed	Answer key: student answer Right answer
1) Choose the right answer	A B..... C.....	A..... A B..... C C.....
2) Complete the text	Text..... Text.....	TextAnswer....Answer Key Text ...Answer... Answer
3) Complete the legend		

Fig.1: the PPT -white board:: instruction-question-answer Key.

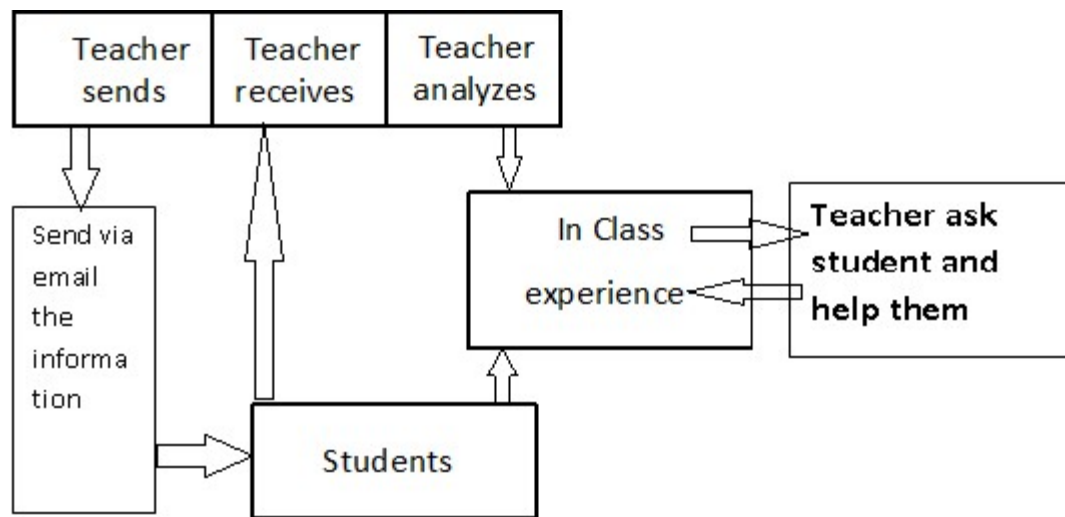


Fig.2: Just in time teaching

I. LIMIT

The limit of our qualitative study is that it is largely based on the experience of the authors. Other quantitative studies are thus necessary.

II. CONCLUSION

PP hybridizing strategies to another tool allows the transition from passive PPT to active PPT. Indeed any method (or tool) must be able to create the AFL. The PPT has the advantage of being an affordable, time-consuming, low-cost tool that meets the previous requirement via its hybridization.

REFERENCES

- [1] Mahin L. Powerpoint Pedagogy. Business Communication Quarterly. 1 juin 2004;67(2):219-22.
- [2] Klemm WR. Efficiency of Handout "Skeleton" Notes in Student Learning. Improving College and University Teaching. 1 janv 1976;24(1):10-2.
- [3] Schmaltz RM, Enström R. Death to weak PowerPoint: strategies to create effective visual presentations. Front Psychol. 8 oct 2014;5:1138-1138.
- [4] Dhouha B, Ghofrane T, Wael F, Mejri A, Lasaad G. Image in Medical Education: Why, When and How to Use It? A Critical Review of the Literature. Biomed J Sci & Tech Res 26(3)-2020. BJSTR. MS.ID.004343.
- [5] PowerPoint Math: The 1-6-6 Rule [Internet]. Manner of speaking. 2010 [cité 25 avr 2020]. Disponible sur: <https://mannerofspeaking.org/2010/03/04/powerpoint-math-the-1-6-6-rule/>
- [6] Rule of Thirds: Improve Your PowerPoint Slides [Internet]. [cité 25 avr 2020]. Disponible sur: <http://sixminutes.dlugan.com/rule-of-thirds-powerpoint/>
- [7] Schmaltz RM, Enström R. Death to weak PowerPoint: strategies to create effective visual presentations. Front Psychol. 8 oct 2014;5:1138-1138.
- [8] Moulton ST, Türkay S, Kosslyn SM. Does a presentation's medium affect its message? PowerPoint, Prezi, and oral presentations. PLoS One. 5 juill 2017;12(7):e0178774-e0178774.
- [9] Kosslyn SM, Kievit RA, Russell AG, Shephard JM. PowerPoint® Presentation Flaws and Failures: A Psychological Analysis. Front Psychol. 17 juill 2012;3:230-230.
- [10] SA M, Shaikh S, Almasri A, Shaikh M, Aqil M, Anwer MA, et al. Comparison of the Impact of Power Point and Chalkboard in Undergraduate Medical Teaching: An Evidence Based Study. Journal of the College of Physicians and Surgeons--Pakistan: JCPSP. 1 janv 2013;23:47-50.
- [11] Kedare R, D K, J W. Impact of PowerPoint and Chalkboard in Physiotherapy Undergraduates. International Journal of Clinical and Biomedical Research. 29 janv 2019;1:9-11.

- [12] Armbruster P, Patel M, Johnson E, Weiss M. Active learning and student-centered pedagogy improve student attitudes and performance in introductory biology. *CBE Life Sci Educ*. 2009;8(3):203-13.
- [13] B S, Soumya K. Keyword based learning (KBL): a novel teaching/learning strategy. *South-East Asian Journal of Medical Education*. 29 déc 2012;6:48.
- [14] B S, Kodimajalu S. Progressive drawing: A novel “lid-opener” and “monotony-breaker”. *Anatomical sciences education*. 1 nov 2010;3:326-9.
- [15] Moravec M, Williams A, Aguilar-Roca N, O’Dowd DK. Learn before lecture: A strategy that improves learning outcomes in a large introductory biology class. *CBE Life Sci Educ*. 2010;9(4):473-81.