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ORIGINAL ARTICLE

# Slide shows vs graphic tablet live drawing for anatomy teaching

*Diaporamas vs tablette graphique pour dessiner en direct pendant l'enseignement de l'anatomie*

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## KEYWORDS

Anatomy teaching;  
Anatomic drawing;  
Graphics tablet;  
Slide show

## Summary

**Introduction.** – Blackboard drawing is the traditional and still widely learned method for anatomy teachers. However, for practical reasons, more and more lessons are done using slide shows. New digital learning tools are developed to create a more attractive teaching method. The objective of this study was to compare the use of graphic tablet live drawing versus slide shows.

**Methods.** – Sixty-five second-year students of the Faculty of Medicine participated in this study during their first semester of 2013–2014 academic year. The selected lecture dealt about neuroanatomy; two brain sections were taught: median sagittal and transverse. The sagittal section was presented via a slide show. The transverse section was taught using a graphics tablet using drawing software. Students were evaluated three times: before the lecture, immediately after the lecture and 8 weeks later. Means were compared using a *t*-test.

**Results.** – Scores were significantly higher immediately after the lecture and 8 weeks later tests in comparing the transverse section (using the graphics tablet) versus the sagittal section (using PowerPoint®). Student satisfaction regarding the use of the tablet was high.

**Conclusion.** – The graphics tablet is a usable and efficient drawing tool in anatomy teaching. This tool requires a specific teacher training and preparation.

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## MOTS CLÉS

Enseignement de  
l'anatomie ;  
Dessin anatomiques,  
Tablette ;  
Graphique ;  
Diaporamas

## Résumé

**Introduction.** – Les schémas à la craie sur tableau noir sont la méthode classique pour l'enseignement magistral de l'anatomie. Cependant, pour des raisons pratiques, de plus en plus de leçons sont effectuées en utilisant des diaporamas. De nouveaux outils d'apprentissage numériques sont développés pour créer une méthode d'enseignement plus vivante. L'objectif de cette étude était d'étudier la pertinence des cours sur tablette graphique par rapport aux cours à l'aide de diaporamas.

**Methods.** – Soixante-cinq étudiants de 2<sup>e</sup> année de la faculté de médecine ont été inclus dans cette étude étendue sur l'année universitaire 2013–2014. Il s'agissait d'un cours de neuroanatomie qui portait sur deux coupes cérébrales ; sagittale et transversale. La coupe sagittale a été présentée au cours d'un diaporama. La coupe transversale a été enseignée en utilisant une tablette graphique et un logiciel pour dessiner. Les étudiants ont été évalués trois fois : avant le cours, immédiatement après le cours et 8 semaines plus tard. Les moyennes étaient comparées par un *t-test* de Student.

**Results.** – Les moyennes étaient significativement plus élevées immédiatement après la conférence et 8 semaines plus tard, en comparant la coupe sagittale (en utilisant une tablette graphique) par rapport à la coupe transversale (en utilisant des diaporamas PowerPoint®). La satisfaction des étudiants concernant l'utilisation de la tablette a été élevée.

**Conclusion.** – La tablette graphique est un outil de dessin utilisable et efficace dans l'enseignement de l'anatomie. Cet outil nécessite une formation spécifique et un entraînement des enseignants.

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## Introduction

Human anatomy is an essential part of the first years' curriculum of medical schools. By learning gross anatomy, medical students get their first "impression" about the structure of the human body, which is the basis for understanding pathological and clinical issues [1].

Traditional anatomy teaching was based on topographical structural anatomy taught during lectures and gross dissection classes. This method has been gradually implemented by including modules such as problem-based learning, plastic models, computer-assisted learning, and curricula integration.

New teaching tools and techniques have been developed to make the learning of human anatomy more dynamic which may result in a better memorization of numerous and complex anatomical structures. [2].

Drawings of the human form has been used to explore, understand and reveal the human body scientifically and aesthetically [3]. Some anatomy books teach drawing techniques [4], while others propose the coloration of preprinted images [5,6]. There are studies applying body painting to teach surface or "living" anatomy [7]. Some articles argue that blackboard drawing constitutes a wonderful and powerful educational media and deserves its rightful place beside other 'high-tech' media [8,9].

Recently, a number of high-quality multimedia programs, and other learning aids emerged enhancing students exploration and comprehension of complex anatomical structures [7]. PowerPoint® is an example of a powerful tool to teach gross anatomy [10].

This study aim was to compare the effectiveness of two approaches for anatomy teaching: a drawing aid (i.e.: graphic tablet) and a PowerPoint® slide show. Medical students exposed to both methods were evaluated and the results of the evaluations were compared.

## Material and methods

Sixty-five second-year students of the Faculty of Medicine in Damascus University participated in this study during the first semester of 2013–2014 academic year. Students were not informed of the subject of the study. The selected lecture dealt about neuroanatomy; two brain sections were taught median sagittal and transverse.

The lecture was presented at the beginning of the neuroanatomy course. It was preceded by three lectures of introduction (1h each of them) in which a brief introduction of the central nervous system was presented including: embryological notions, the global form and location of ventricular system, thalamus, caudate and lenticular nuclei.

The sagittal section was presented using PowerPoint® slides containing anatomical Netter Atlas figures [11] and Magnetic Resonance Imaging (MRI) images [12]; the text was both in Arabic and English. Twenty-five anatomical structures were explained during a 20 min course (Fig. 1).

The transverse section was explained using a graphic tablet (Wacom 12WX Graphics tablet, Wacom®, Kazo, Japan), for drawing and writing via Adobe Illustrator® software (Adobe systems, San José, CA, USA). The drawing of this section was built progressively in front of the student. Printed texts, atlas images and MRI images were also integrated in the same screen and it was possible to draw on the existent images or to write some notes during explication (Fig. 2). Twenty-five anatomical structures were taught for 20 min, just as for the sagittal section.

Students were evaluated 3 times; before the lecture, immediately after the lecture and 8 weeks later. The three tests were blinded. Evaluation was done with a 10-question questionnaire (5 for each section) during 5 min (Figs. 3, 4). The types of questions varied but the same types were used for both sections. Sectional images from Atlas, dissection or MRI were projected and students were asked to determine

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