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VIRTUAL MICROSCOPY AS A LEARNING METHOD IN PART-TIME MEDICAL EDUCATION

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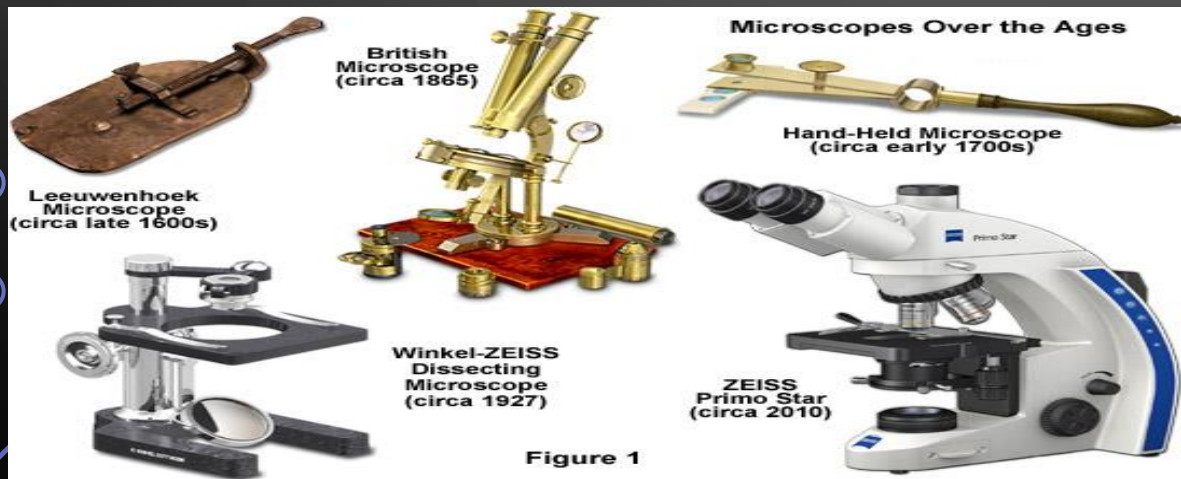


University Goce Delcev - Stip

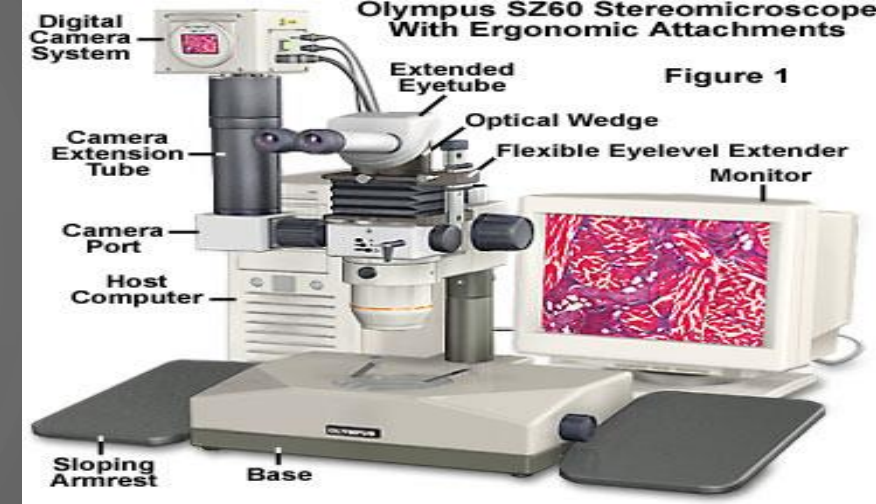
R. MACEDONIA

THE INVENTION OF THE MICROSCOPE

- SO MANY TECHNOLOGICAL ADVANCEMENTS HAVE BEEN NOTED IN THE TEACHING AND PRACTICE OF THIS COURSE/CYTOLOGY AND HISTOLOGY
- THE INVENTION OF PROJECTORS AT THE BEGINNING OF 20TH CENTURY, MADE IT POSSIBLE TO PROJECT MICROSCOPIC SPECIMENS ONTO SCREENS
- BY THE LATE 1980S, DIGITAL TILES WERE INTRODUCED AND DIGITAL SLIDES WERE DEVELOPED
- WITH COMPUTER TECHNOLOGY AND THE DEVELOPMENT OF SOFTWARE, CAN SCAN AND COPY GLASS SLIDE IMAGES
- DIGITAL SLIDES GAVE RISE TO VIRTUAL MICROSCOPY



VIRTUAL MICROSCOPY



method of posting microscope images on, and transmitting them over computer networks

use the platform of hardware accompanying with the software and include pre-and post-image processing, compression, transmission and visualization of the slides

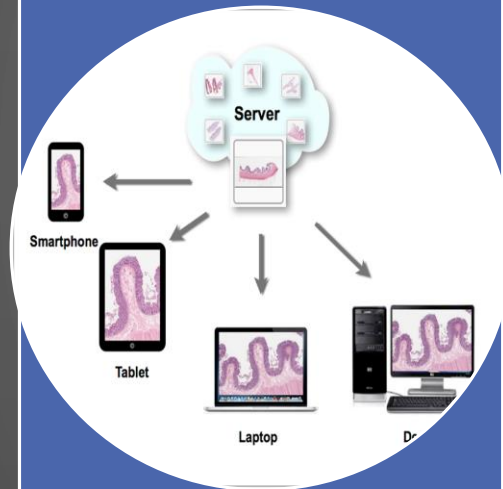
a high resolution camera takes several pictures of tissue slides, and with the aid of a massive processing power, hundreds of pictures are collaged to a single image of enormous size

scanned digital images, can be stored in virtual archives, on local or distant servers, has resulted in novel approaches in e-learning

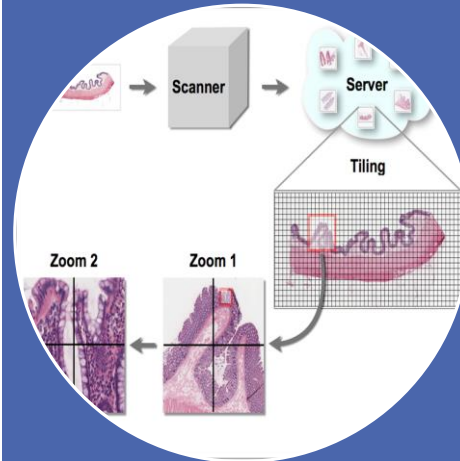
observation of microscopic samples in a computer screen similarly to a real microscope allowing to observe, navigate an annotate on virtual slides



VM allows on-line access to entire scanned sections of tissue that can be viewed on a computer



in exactly the same way as conventional glass slides with a microscope



can be explored by the learner at several magnifications



VM takes the microscopy experience beyond the classroom by allowing whole slide microscopy at different magnifications in the on-line web page



Unlike traditional microscopic sections on glass slides, digital slides can be securely accessed on-line at anytime from anywhere and cannot be damaged



are usually
inadequate

Classroom facilities

Laboratories

personnel

Equipment

teaching materials

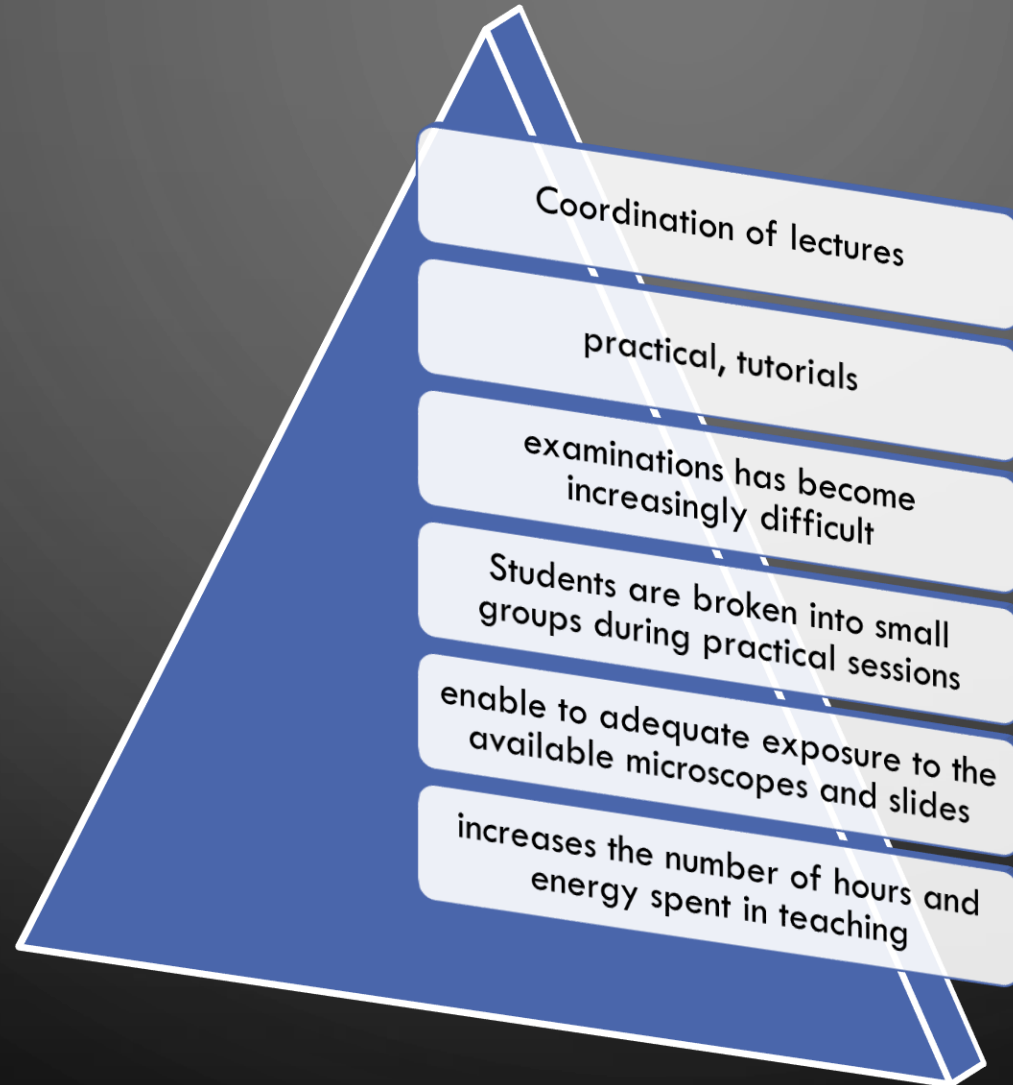
Reagents

an over population of students



Teaching and learning in
developing countries
have been characterized
by the problem

CONVENTIONAL MICROSCOPY



NOVEL APPROACHES IN E-LEARNING

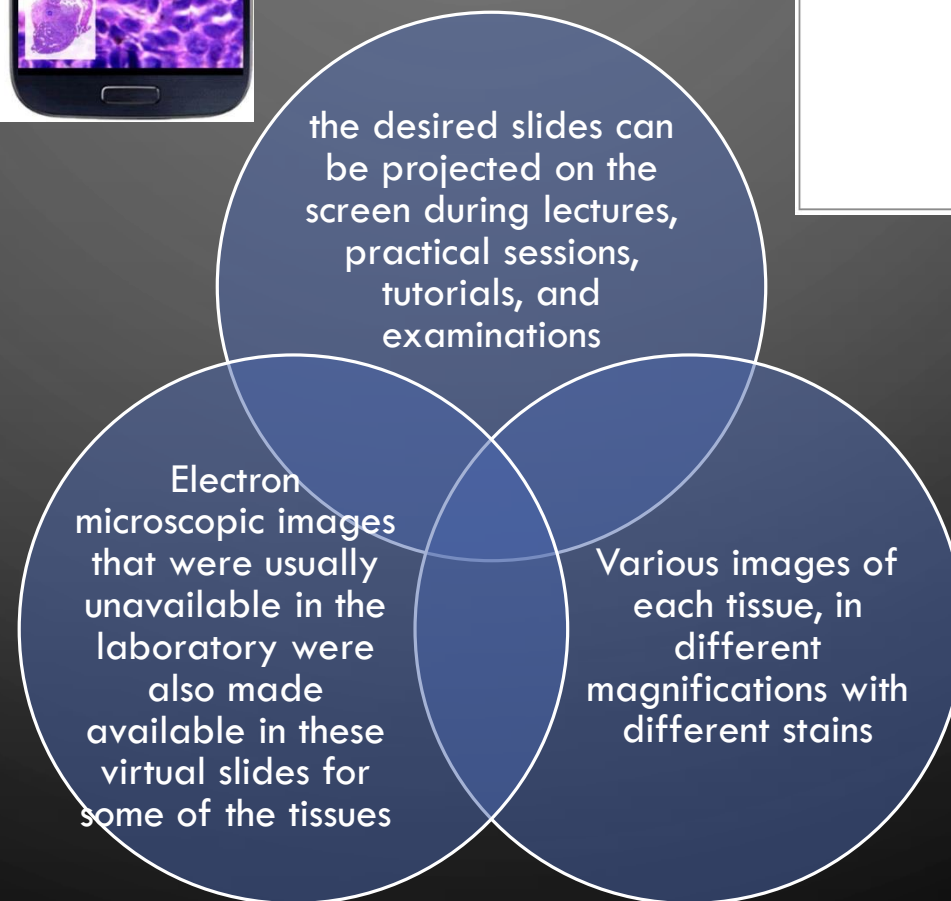
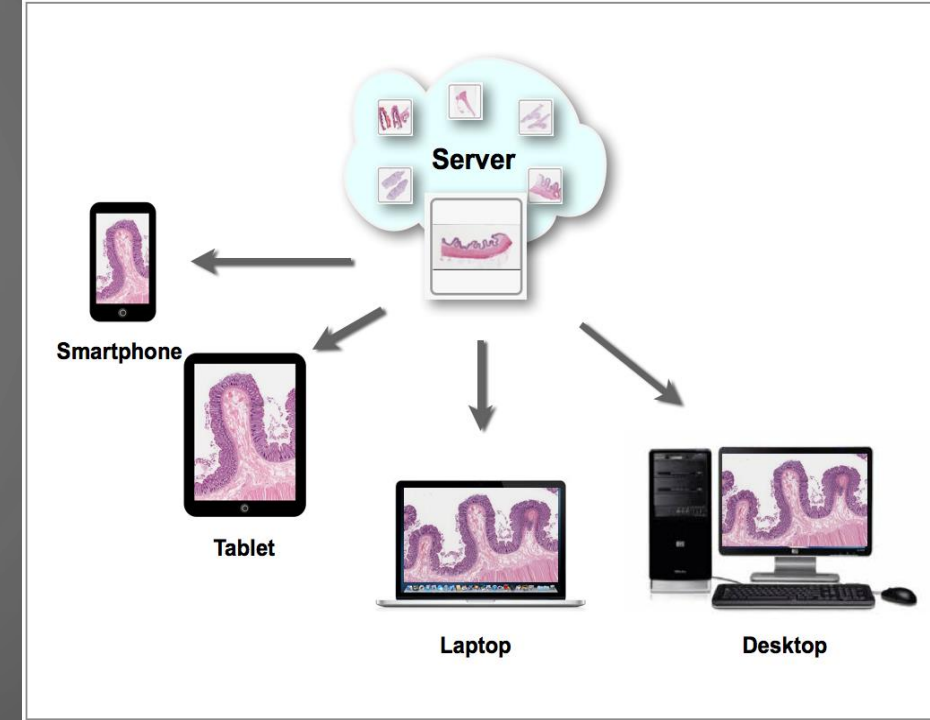
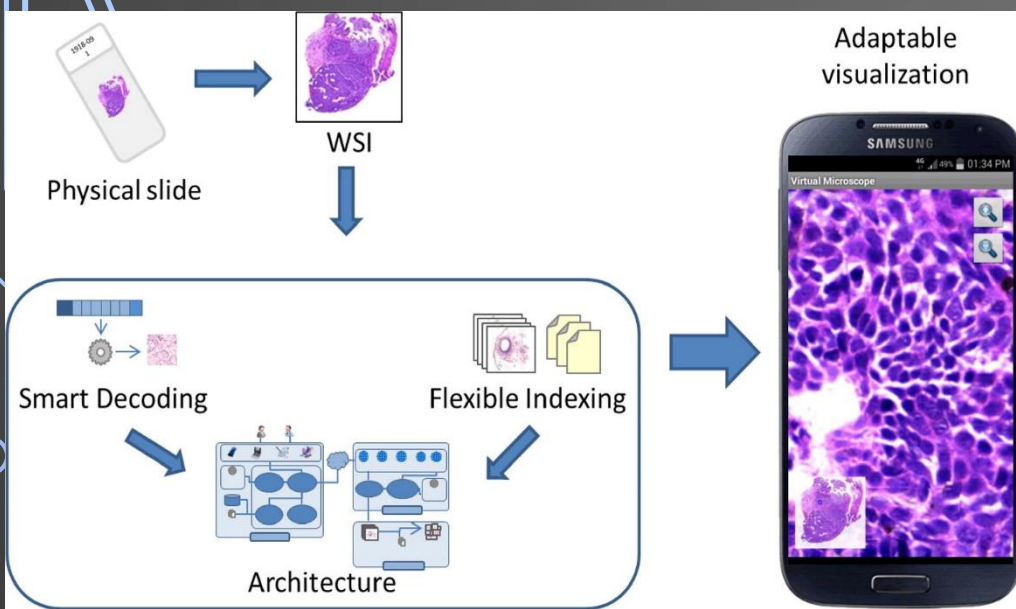
The use of high resolution scanned digital images, which can be stored in virtual archives on local or distant servers

major changes in the way practical histology and histopathology classes

the financial and administrative advantages allow enormous economic savings in the long-term with regard to equipment, technical staff and laboratory facilities

There is no longer a need for individual student microscopes, for technical staff for microscope maintenance

repair or worries about the loss of valuable specimens





to evaluate and present our experience about effectivity of uses the VM and other tools of e-learning



evaluated the acceptance of the VM and its learning outcomes compared with the conventional light microscopy (LM).



to regarding the utilization of VM as a new teaching methodology and learning outcomes on part-time student

MATERIAL AND METHODS

descriptive cross-sectional study conducted among medical part-time students nurses and medical laboratory technicians

Histology and cellular biology as a courses are included in first year

All participants were interviewed using a self administered questionnaire level of satisfaction with VM

Also we evaluated their's time for learning



This study was a cross-sectional survey which was conducted at the Faculty of medical sciences, University "Goce Delcev" in Stip



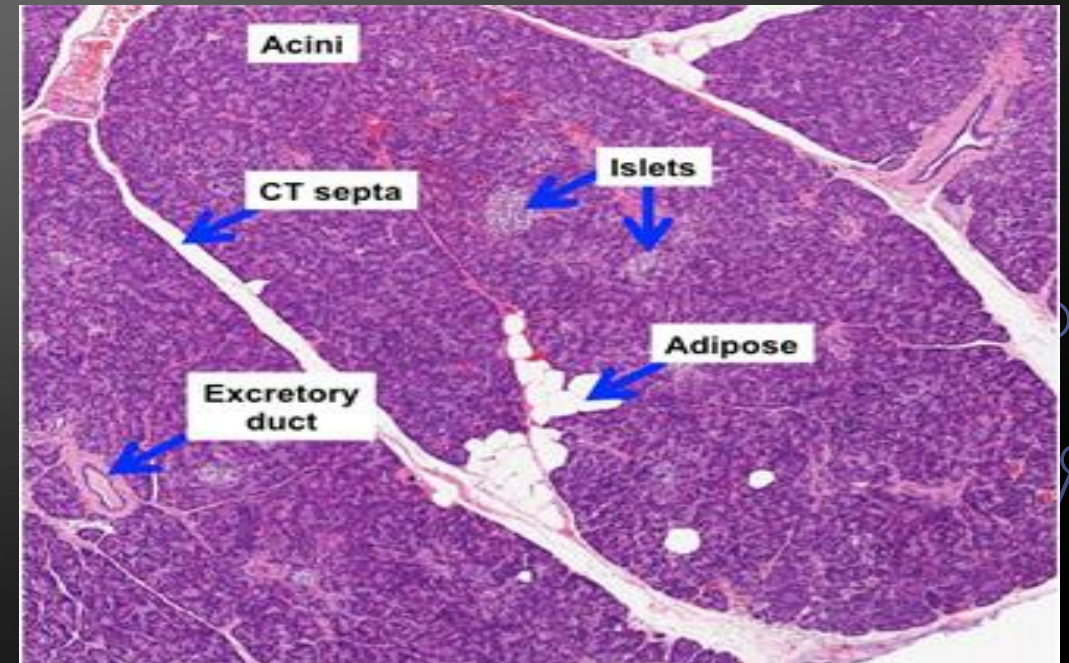
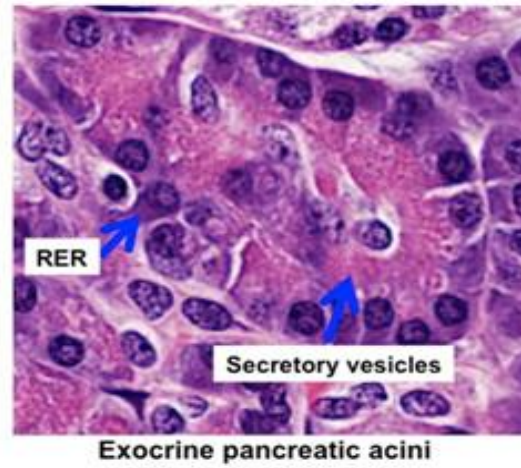
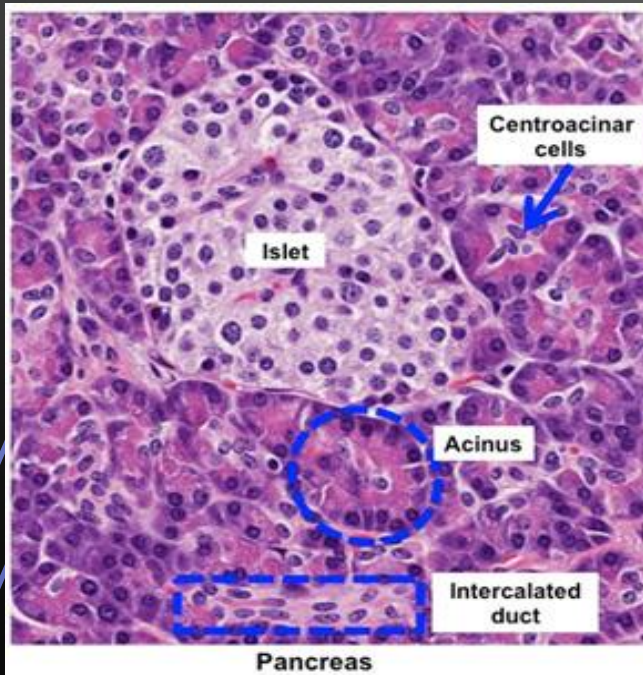
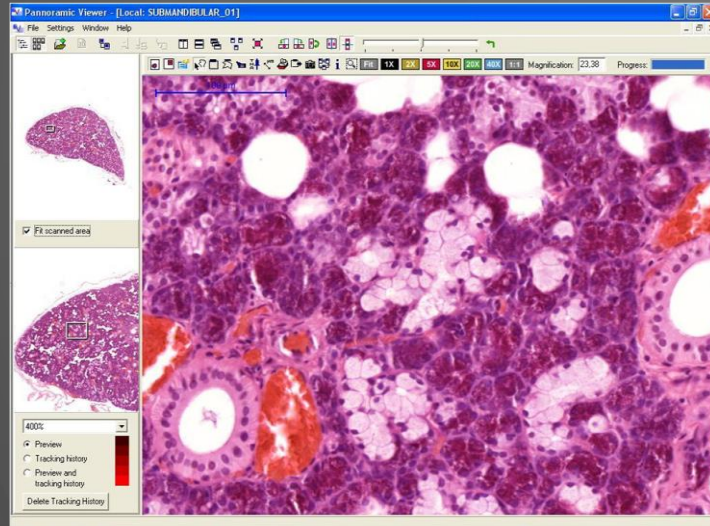
The very important factor as a tool of mesurment of learning, are their final results of exams

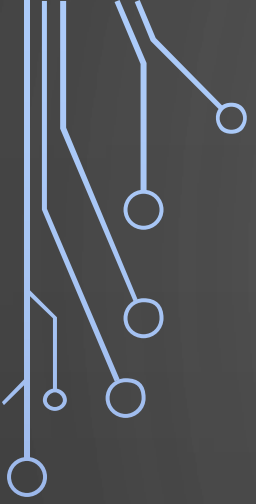

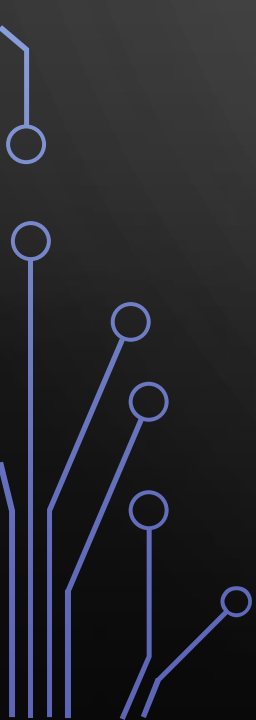
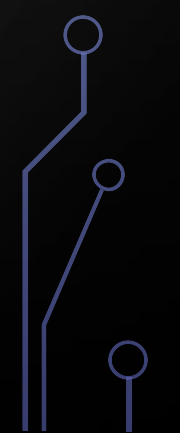


RESULTS AND DISCUSSION

- The most outstanding histology slides have been scanned and placed on the VM archive and made available for all students
- Photomicrographic images of various tissues (in different sections, with different stains and preparations, and at various magnifications) were made using light research microscope Leica DM4500 P
- We archive and incorporated the slides (the images) into existing e-learning resources that have been developed in the University (www.ugd.edu.mk)

VARIOUS IMAGES OF EACH TISSUE



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- Part-time students can prepare the exams using the lectures and presentations attached on the platform e-learning, www.ugd.edu.mk
 - Students can access the laboratory material at any time, day or night, prepare assignments and prepare for examinations
 - The same slides can be linked with commercial software for e-learning and the problems of copyright doesn't existe
 - On the exams, the part time students are supplied with the virtual slides of each practical activity

CONCLUSION

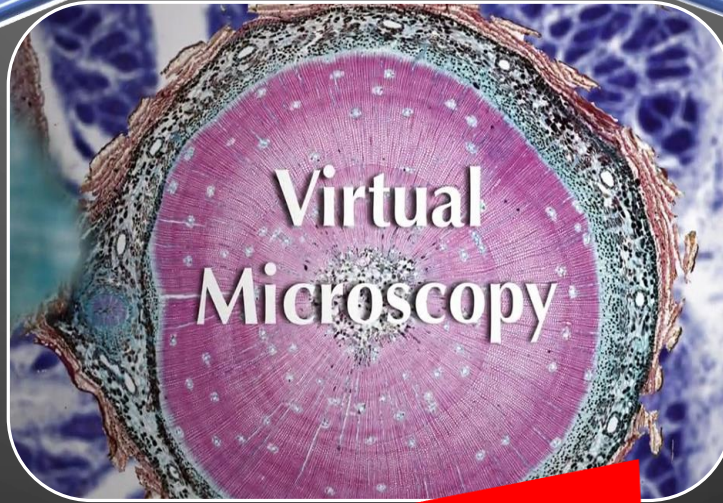
Comparing students' practical evaluation scores and exam grades for the 16/17 academic year to prior (due to 2008/2009) we observed how the grade for the histology and cell biology practical exams went up.

92% of part-time students reported that the use of the VM software was easy and they very appreciate the usefulness of the activity

The results of exam of part-time students which used the VM activity were better than those which used the conventional LM activity and they spend much more time for learning.

Part-time students appreciate more interest and enthusiasm when used VM activity as a tool for learning

(Students today, are all highly computer competent, they greatly appreciate the advantages of VM





FEATURES, APPLICATIONS



Visualization (Virtual Microscopy)

AMD

Medicine and
biology

Clinical trials

Scientific
research

Biotechnology



Data Analysis

E-learning

Teleconferencing
teleconsultations

Quantitative
data analysis

High-Content and
High-Throughput
Screening

MICROSCOPE.IT

A grayscale photograph of two hands shaking over a computer keyboard, with a pen and papers on the desk.

THANK YOU



Contact@website.com

A teal rectangular area with a white speckled pattern. It contains the text 'KEEP AN ON YOUR' and two stylized black eyes.

KEEP
AN
ON
YOUR

A solid light blue horizontal bar.

EDUVISION

