



IMAGING PARTNERSHIP

Exploring Education Through Imaging

Integrated Learning Systems

Breakdown of Lessons for the 6 week workshops:

Week 1 and Week 2: **Photography Practical Sessions for Applied Engineering**

Learning opportunities for pupils include:

Engineering

Stroboscopic photography is used in wind tunnels etc to record the flow of air/fluids around objects – FLASH, BURST MODE, SHUTTER SPEED, LIGHT PAINTING, PANNING

Also, recording series of events eg for consumer booklets for home assembly

Photography in Marketing/Advertising in bringing a product to market.

Metrology – science of measurement – DEPTH OF FIELD

Aerospace Engineering

- Documenting engineering experiments and prototypes – (documentary photography)
- Aerial photography – (birds eye view/worms eye view)
- Close-up and macro photography to see small areas of aircrafts or spacecraft's.
- Understanding lighting and perspective to take interesting photos of aircrafts.

Aviation Engineering

- Architectural photography for airport design and aerodrome planning
- Angles and viewpoints- bird/worms eye view for airspace development, and airspace laws.
- Landscape photography – learning how to capture large areas into one clear image.

Bio-Engineering

- Macro photography – being able to capture molecules and use in microbiology
- Documentary photography – to document experiments and results accurately.
- Real-life photography – being able to capture colours and textures accurately and as true to real life as possible.
- Landscape photography to analyse and document environmental modifications and its effectiveness.

Engineering Day

- Product/fine art photography – product design, learning how to take photos that appeal to a certain market to sell a product.
- Sport photography – sports technology – understanding panning to capture fast movement and developing onto shutter speeds, being able to 'capture a moment'.
- Photo planning – arranging a photo to best show off your idea/product.

Week 3 and Week 4: Photography Practical Sessions for Medical Technology and Digital Healthcare

Learning opportunities for pupils include:

Control and manipulation of light – LIGHTING, PORTRAITURE. Light detection – Light Dependent Resistor circuits to control a range of outputs through existence, absence or changes in level of light – triggering camera shutter remotely and independently?

- o (Medical Imaging, Cardiology, etc)
- o Nanotechnology, biotechnology, biomedical engineering, and medical practices
- o Medical Devices, Pharmaceuticals

Digital healthcare (also known as digital health) is an upcoming discipline that involves the use of information and communication technologies to help address the health problems and challenges faced by patients. These technologies include both hardware and software solutions and services.^[1] Generally, digital healthcare is concerned about the development of interconnected health systems so as to improve the use of computational technologies, smart devices, computational analysis techniques and communication media to aid healthcare professionals and patients manage illnesses and health risks, as well as promote health and wellbeing.

Week 5 and Week 6: Photography Practical Sessions for Consumer Optics

Learning opportunities for pupils include:

- Macro photography – microscopy, viewing a magnified version of a sample.
- Light – understanding how to use light in photography and its behaviours and properties.
- Medical imaging – learning about x-rays and how to take medical images
- Optical Design – learning the processes and techniques used in making photographic lenses, practical – playing around with layering different lenses and filters to see the affect.

Week 7 and Week 8: Photography Practical Sessions for Informatics

Learning opportunities for pupils include:

- Bioinformatics

Biomimetics or biomimicry is the imitation of the models, systems, and elements of nature for the purpose of solving complex [human](#) problems.

- Legal Informatics

Legal informatics is an area within information science. Erdelez and O'Hare (1997) define legal informatics as follows:

The American Library Association defines informatics as "the study of the structure and properties of information, as well as the application of technology to the organization, storage, retrieval, and dissemination of information."

- Biomimetic

Biomimetics could in principle be applied in many fields. Because of the complexity of biological systems, the number of features that might be imitated is large. Some examples of biomimetic applications at various stages of development from prototypes to technologies that might become commercially usable include:

Leonardo da Vinci's design for a flying machine with wings based closely upon the structure of bat wings

Week 9 and Week 10: Additional activities using Emerging Technologies

Learning opportunities for pupils include:

Areas include:

- Artificial Intelligence
- Computer Science
- Biochemistry
- Oceanography
- Geology
- Pathology
- Endoscopy
- Genetics
- Biomedical Science
- Chemical Engineering
- Pharmacology
- Computer Science Engineering
- Electrical Engineering
- Energy Engineering
- International Health
- Cardiology
- Nuclear Medicine
- Biomedical Engineering