

Meaningful Learning Experiences

Strategic Commitment	✓	Part of a regional, ESF-funded 'Careers Local' programme
Curriculum Provision	✓	GCSE Physics content about 'Uses of Nuclear Radiation'
Employer Partnerships	✓	Involving a successful local dental practice
Reflective Young People		
Informed Career Choices	✓	Revealing the variety of roles and pathways in Dentistry

Award-winning dental practice shows GCSE students how X-rays are used safely

In their bid for funding support, Pingle Academy in South Derbyshire stated, *'We are in need of a sustained and regular approach to CEIAG and our students need it to be embedded into their lessons.'* One of six curriculum projects developed by the school involved year 10 students learning about, *'Hazards of radiation, irradiation and uses of radiation in medicine and uses of nuclear radiation.'* The teacher stated that this topic is, *'Difficult to safely demonstrate. Lack of appropriate equipment and resources in school. Models and demonstrations tend to be less interactive and too abstract for students to fully understand.'*

Alexandra Dental Care is an award-winning practice in the town. A short video recorded a young dental nurse from the practice showing the X-ray machines used as part of patient treatment. She also talked about how staff are protected from radiation and about her apprenticeship training.

Other information was provided from PowerPoint slides and patient information sheets that are provided to patients by the practice. Students were challenged to produce an information leaflet about the use of X-rays. These were sent to the practice from where a short video message by the dental nurse and the practice manager provided positive feedback to students. The practice was able to use the story and material for an article in the next issue of their patient newsletter.

Benefits for the Students

- The GCSE specification requires students to, *'describe and evaluate the uses of nuclear radiations for exploration of internal organs, and for control or destruction of unwanted tissue'* and *'evaluate the perceived risks of using nuclear radiations in relation to given data and consequences'*
- A potentially academic or theoretical topic was presented to students as something connected with a routine visit to the dentist
- I am most proud of: *'Finding out new things about the dentist'*

Benefits for the School

- The project helped to achieve the ideal objective described in the teacher brief, wanting students to, ‘... have a clear understanding of the different levels or danger and risk with each type of radiation and how nuclear radiations can be used safely’
- The Physics teacher also has the role of Raising Aspirations Coordinator, so the project enabled him to share good practice with colleagues about contributing to Gatsby career benchmarks 4 and 5 from his personal experience

Benefits for the Employer

- Alexandra Dental Care is a very busy practice, with all staff fully occupied during working hours. Involvement in the project did not require any staff to leave the workplace
- The practice produces a newsletter for patients twice a year. The project and examples of student work provided the basis of an article about safe use of X-ray equipment
- The town is served by a number of dental practices. This project raised the profile of Alexandra Dental Care among year 10 students and their parents and families

X-Rays – The Challenge!

X-rays are high-energy electromagnetic waves much the same as Gamma rays. They are emitted in many radioactive decays and may be very penetrating, so require substantial shielding.

Your challenge is to research a variety of information about the use of X-rays in dentistry and then produce an information leaflet that will inform clients at Alexandra Dental Care – including families with children – about how they use X-rays safely.

ALEXANDRA DENTAL CARE
The Priory Academy

ALEXANDRA DENTAL CARE

HOW DO DENTISTS USE X-RAYS?

- Help your dentist to identify problems, like cavities, tooth decay, and impacted teeth.
- Capture images of the interior of your teeth and gums.

Why are dental x-rays important?

They detect:

- Cavities
- Gum disease
- Some tumours

WHAT ARE X-RAYS USED FOR?

- Used in hospitals to produce photographs of bones
- Checks for breaks or fractures
- They can penetrate less dense matter such as skin and body tissue

DANGERS OF RADIATION:

- Exposure to radiation over a long time can cause cancer.
- Medium levels can lead to sickness, headaches, vomiting and a fever.
- Low levels of radiation are not dangerous.
- High levels can kill you by causing damage to your internal organs.

SIDE EFFECTS:

- Fainting
- Bleeding
- Vomiting
- Hair loss (very rare)

ALEXANDRA DENTAL CARE

Year 10 pupils learned about the properties and hazards of radiation as part of their GCSE Physics studies by looking into the use of X-rays at a nearby dental practice. This included a short video from the practice nurse and a challenge to produce a patient information leaflet.