

The eSlide Project

Virtual Microscope for Teaching Microfossil Identification

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The eSlide project comprises software and image datasets for training students in the basics of microfossil identification without the need for sample preparation or microscopy facilities. It is particularly relevant for undergraduate teaching in the current coronavirus crisis where in-person practical teaching may not be possible.

eSlide software runs natively on Windows or macOS or in a web browser on desktops, notebooks or tablets for easy deployment. It provides a controlled learning environment where students can examine type images or perform counts using simulated slides of instructor-defined composition.

The screenshot displays the eSlide software interface. On the left, a large window shows a virtual microscope slide with a pollen grain. Below it are 'Zoom in' and 'Zoom out' buttons. To the right of the slide is a table titled 'Slide 1' showing a list of identified grains with their names and a feedback status (green checkmark for correct, red X for incorrect).

Slide 1
1 Alnus glutinosa Betula
2 Calluna vulgaris Calluna vulgaris
3 Pinus sylvestris Pinus sylvestris
4 Plantago lanceolata Cyperaceae
5 Poaceae Poaceae
6 Calluna vulgaris Calluna vulgaris
7 Alnus glutinosa Alnus glutinosa
8 Calluna vulgaris Calluna vulgaris
9 Alnus glutinosa Alnus glutinosa

Below the table are buttons for 'Prev Indet.', 'Prev Error', 'Clear ID', 'Next Indet.', 'Next Error', and 'Feedback'. To the right of the slide is a grid of pollen types for selection, each with a button and a counter. The 'Total count' is displayed as 22. At the bottom right, there is a section titled 'Exercise 3: Trial pollen counting with feedback on errors' with instructions and a list of images.

Help and feedback can be adjusted to suit various levels of knowledge and experience, from introductory classes through to preliminary training of dissertation or research students. Practical exercises are defined using a simple Excel spreadsheet template. HTML files can be included to display customized help and guide students through formative or summative exercises.

Image datasets: The eSlide project currently has an extensive image dataset of common UK pollen types. Image datasets of diatoms and other microfossil groups are in progress.

Status: We are currently testing eSlide with our 2nd year undergraduates. We aim to have a finished version with pollen and diatom images ready by Feb 2021.

More information is available at <https://www.staff.ncl.ac.uk/stephen.juggins/eSlide/index.html>.

A beta online version of the software is available at <https://www.staff.ncl.ac.uk/stephen.juggins/eSlide/eSlide.html>.

Please get in touch with us if you are interested in using eSlide in your own teaching. Comments, feedback and contributions to improve the software and expand the image datasets are very welcome.