

LIVE Project Report

Vicki Waring, Raymond Macharia,

'Development of intelligent plastinated specimens for self-directed learning of anatomy and physiology'

The intelligent plastinated specimens were created during the first year of the project. This included preparation of scripts that contain factual information about the anatomy and physiology relating of each specimen. In total we have approximately 30 plastinated specimens including hearts, limbs, stomachs and reproductive tracts from different species, a sectioned horse head and a rainbow trout. The scripts were then recorded using Livescribe pens that record audio onto microdot paper so that it may be used to label plastinated specimens. The microdot paper was mounted onto pins that were then embedded into the plastinated specimens. The final products are a variety of plastinated specimens with an audio description of the most important anatomical and physiological features built in. We call these animated plastinated anatomical specimens, (APASs).

The second and last year has been spent testing the value of these specimens. 128 first year preclinical veterinary students and 38 second year preclinical veterinary students were split into 3 groups who each received different learning resources for private study. Groups A received museum pots, groups B received regular plastinated specimens, and groups C received APASs. Students were given 40 minutes to study using these specimens and were tested before and after this session in a so called pre- and post- test. Improvement in test results of each group was recorded. Student opinion of the resources was gathered in a questionnaire. Results showed that Groups A, B and C all showed an improvement in test performance. Group C who received the APASs showed the lowest improvement in test performance but this was not statistically significantly different from groups A and B, ($p=0.65$).

It was considered that the APASs may be so complete a learning resource that the students were studying passively rather than actively engaging in their studies in the way that the students in groups A and B (using museum pots and regular plastinated specimens) had to. Based on this a new generation of APAS was produced that posed questions on the anatomy and physiology to stimulate students to search for the answers. We repeated the same experiment described above this time including an additional group, Group D who were given these new APASs, which posed questions but did not supply the answers, to study with. Graduate entry BVetMed students ($n=23$) were recruited for this study. We compared the results of the pre- and post-tests for each individual. Group D showed a statistically significant decrease in test performance compared to all other groups, ($p=0.02$).

The questionnaires revealed that students liked the tactile nature of plastinated specimens and considered APASs a useful revision tool although it was reported by some students that APASs provided too much information and could be tricky to use. Students who used APASs (either the original or new generation with probing questions in the audio) were less likely to use additional resources to study with than students who used museum pots or non-animated plastinated specimens.

The specimens are available in the anatomy museum at Camden for students to use in their own private study time although it is not expected that they will be used as a sole learning resource.

The results are being written up for publication at present and will hopefully be disseminated at a suitable education conference over the next year.