DEVELOPMENT OF A COMPUTER BASED LEARNING MATERIAL ON ANATOMY AND PHYSIOLOGY OF THE DIGESTIVE SYSTEM OF FARM ANIMALS

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Introduction

Recent trends in education promote learner centered approaches. Accordingly, the new curriculum of the Faculty of Agriculture promotes learner centered approaches to enhance active independent learning by students. However supplementary material available for such activities is often inadequate. Hence the need for developing supplementary learning material has been recognized.

Due to the above, the primary objective of the study was to develop an interactive computer based learning material, using commonly used software so that it would act as a model for developing future computer based material in the faculty. Determining the effectiveness of the material was a limited objective during this phase, and needs to be done in greater depth in the future.

Methodology

The principles of instructional system design were used in developing the material. The ADDIE model which includes the phases of analysis (A), design (D), development (D), implementation (I), and evaluation (E) was used as the basis. In the analysis phase there was a high level of interaction with the teacher in charge to determine the needs (Kruse & Keil, 2007). It was designed, so that the learning would be more effective and efficient (Morrison et al. 2007). In analyzing, the target group was determined and accordingly the need identification was conducted. The design phase included the development of 60 course objectives for each task according to the intended learning outcomes of the course. Content outlining, creation of the storyboard based on lesson objectives and the use of multimedia elements were done in the development phase. In producing this material Microsoft PowerPoint was used as the main authoring tool (Wempen, 2007) and Microsoft Visual Basic was used in creating quiz sessions. Different types of animations were used in this product to make it attractive. Some advanced features such as trigger effect, were also used to create greater interactivity. During development continuous evaluation and modifications was done based on the feedback of the supervisors, subject matter specialists and experts.

Results and discussion

Product

The product includes sections on animal categories, and the anatomy and physiology of the mouth, saliva, stomach, compound stomach, rumen microbes, intestines and the digestive systems of poultry, rabbit and horse. It is rich in text (more than 10,000 words), graphics (126 images), animations, audio and video. Selected major features of the product includes, navigation to any point which makes it user friendly, zoom effects, additional reading material, animated motion paths, and mouse over effects. Most of the features were made possible by the innovative and creative use of the authoring tool by the developer. The Fig. 1 shows the home page and Fig. 2 shows an example of a page.

Evaluation

The product was tested using 15 students who were following this course. As seen in Table 1, 80% or more indicated that this product was excellent or very good in terms of its

general format, quality of information, adequacy of information and ability to understand. The evaluation criteria stated as "Ability to Understand" measured the clarity of the message. It is also interesting to note that no one mentioned that it was unsatisfactory, or that it should be improved under any of the sections. Eighty percent of the respondents said that the learning material is extremely helpful, and the rest said it was helpful. All respondents stated that they would recommend this material to be used by other students with 87% of them recommending it highly. This clearly indicates that the material is effective in helping them to learn the subject. The overall evaluation of the material was excellent (73%) or very good (27%). Thus it is clear that this product has been developed to a high standard.

Conclusion

This product was prepared to promote supplementary material to support classroom teaching, and will benefit agricultural undergraduates who follow the compulsory course on "Anatomy and Physiology of Farm Animals". The advancement of information and communication systems has created new challenges to those who are responsible for developing and sharing information. This product showed the possibility of realizing this potential.

The feedback from students showed that the product developed is of high quality. It was based on the specific needs of the course,

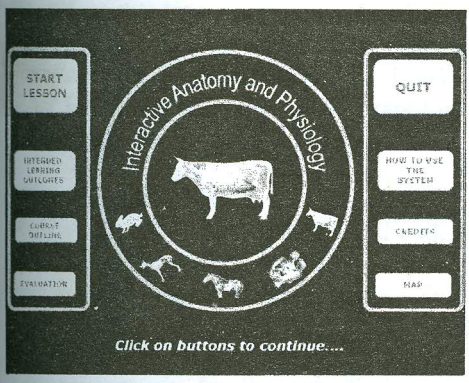

Figure 1. Home page of the product

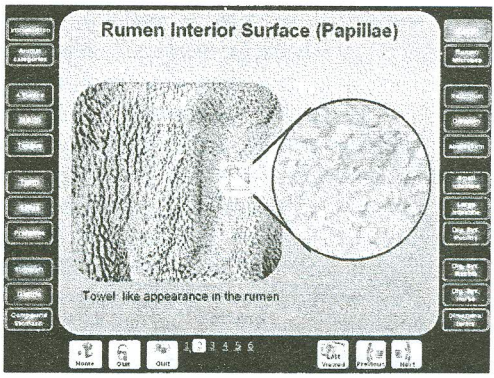

Figure 2. Page from a lesson

Table 1. Feedback obtained regarding the product

Evaluation Criteria	Excellent (%)	Very Good (%)	Good (%)	Should be Improved (%)	Unsatisfactory (%)
General Format	40	47	13	0	0
Quality of Information	53	27	20	0	0
Adequacy of Information	33	47	20	0	0
Ability to Understand	54	33	13	0	0
Overall Evaluation	*73*	*27*	*0*	*0*	*0*

and the content was approved by a subject matter expert. Thus, this learning material is recommended for the use by undergraduates in the Faculty of Agriculture.

As this product was developed with commonly used software this process can be more widely used. Thus, this product can act as a model for the development of computer based learning material in other courses too. As this is an initial step in producing such material within the Faculty, it is recommended that similar material to be developed for other courses too in the future.

References

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