eBCSi©: Mobile Application In Teaching of Body Condition Scoring (Bcs) Index Among Veterinary Students

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Abstract

Body condition scoring (BCS) is the assessment of subcutaneous fat stores based on visual evaluation and provides an immediate appraisal of the degree of obesity in an animal. In this study, the BCS index application was designed in order to improvise the conventional technique through visual observation, which requires trained and experienced workers to regulate and often requires much time to determine. This is also to encourage the student to learn in a creative way. This study has two objectives: Firstly, to develop a mobile application on the BCS index for beef cattle, and secondly, to evaluate the effectiveness of the mobile application by evaluating students' knowledge. For the first objective, an android application named eBCSi© was created using the Flutter programming language and incorporated all the beef cattle BCS index parameters. By installing eBCSi© into handphones, students can key in the parameters for a visual description of key body locations associated with each condition score. The final BCS score would be generated in conclusion by embedding animal management advice and nutrition recommendations. This concise and fast-generated result would greatly assist students in determining the next necessary action plan for managing cattle performance. For the second objective, 68 veterinary students have participated. Students were taught how to use the mobile application. One week was given to familiarize and key in the visual parameters of cattle observed in Putra Agriculture Centre, UPM. Pre- and post-intervention knowledge assessments were conducted. It yields significant results (paired t-test: pre-mean score of 68.3%, post-test mean score of 86.6%, $p < 0.05$). Most of the participants gave favorable feedback, expressing that user-friendly and enjoyable applications generated a rapid BCS result and provided insightful information about cattle BCS. In conclusion, this study has successfully developed eBCSi©, a mobile application that is user-friendly for teaching BCS and fulfilling the topic learning outcome. This mobile-based education tool has proven to increase the knowledge test score on the cattle BSC index.

Keywords: Mobile application, Body condition score, Cattle, Veterinary students

eBCSi© :MOBILE APPLICATION IN TEACHING OF B SCORING (BCS) INDEX AMONG VETERINARY STUDENTS

ABSTRACT

Body condition scoring (BCS) is the assessment of subcutaneous fat stored based on visual evaluation and provides an immediate appraisal of the degree of obesity of an animal. In this study, the BCS Index application was designed in order to improvise the conventional technique through visual observation which require trained and experienced workers to regulate and often require much time to determine. This also to encourage the student to learn in a creative way. This study has two objectives: Firstly, to develop a mobile application on BCS index for beef cattle and secondly, to evaluate the effectiveness of the mobile application by evaluating students' knowledge. For the first objective, an android application named **eBCSi©** were created using the Flutter programming language that incorporated all the beef cattle BCS index parameters. By installing **eBCSi©** into handphones, students can key in the parameters for visual description of key body locations associated with each condition score. The final BCS score would be generated in conclusion with embedding animal management advises and nutrition recommendations. This concise and fast generated result would greatly assist student in determining the next necessary action planinmanagingcattle performance.

For the second objective, 68 veterinary students have participated. Students were taught on how to use the mobile application. One week was given to familiar and key in their visual parameters of cattle observed in Putra Agriculture Centre, UPM. Pre- and post-intervention knowledge assessment was conducted. It yields significant results (paired t-test: pre mean score of 68.3%, post-test mean score of 86.6%, p<0.05). Majority of the participated students provide positive feedback stating easy and fun to operate apps, generated a fast BCS result and provide informative knowledge on cattle BCS. In conclusion, this study has successfully developed **eBCSi©**, a mobile application that is user friendly for teaching BCS and fulfilling the topic learning outcome. This mobile-based education tool has proven to increase the knowledge test score on cattle BSC index.
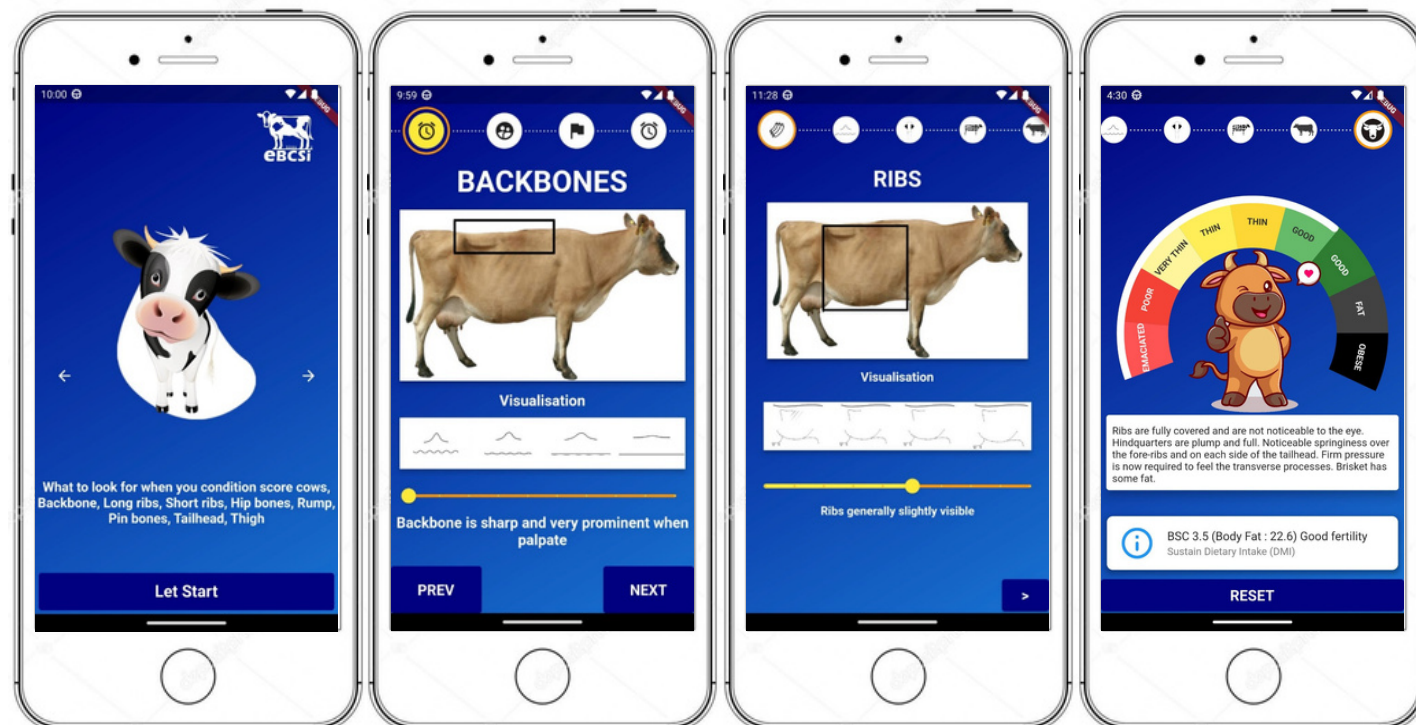
OBJECTIVES

0 To develop a mobile application on beef cattle BCS index for veterinary student.

**1** To evaluate the effectiveness of teaching BCS using the newly developed mobile application among veterinarystudents.

0 2 USEFULNESS

☐ Transform paper-based BCS calculation into electronic BCS format (**eBCSi©**).

☐ It allows user to determined cattle BCS more rapidly, systematically and independently all in a creative manner.

VALUE ADDED

🏆 New approach of learning BCS through the concept of student-centered, clinical simulation and better learning experience.

🏆 Fun and interactive way to determine BCS eventually providing specific assistance/ suggestion in husbandry decisions.
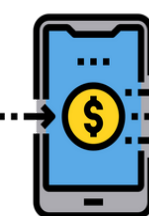
COMMERCIALISATION POTENTIAL 🍎 🤖 ⊞

✓ Android and IOS mobile app published on Google PlayStore and Apple App Store for free download but has 'In App Purchase' for advance or premium features.

✓ eBCSi© app is in English and would be potentially expand to include multiple languages selection, thus it is more user friendly and may be used in other country apart from Malaysia.

STUDENTS' FEEDBACK

❝First of all this app is really easy and fun to use. It specifically guide me what to look for and how to compare the anatomical differences seen on the cow.❞
- **1st year Veterinary student, FPV UPM**

❝It makes me more focus and confident in conditioning the bull. I just need to follow the guide given in the app. I really hope this kind of IOT for animal husbandry could be developed more in the future for students like me to learn❞
- **2nd year Veterinary student, FPV UPM**

❝In my opinion, the most important part is the advice and suggestions given at the conclusion, at least I know what is the next step to take to improve the animal❞
- **3rd year Veterinary student, FPV UPM**

❝I wish I have this app to use while learning about animal BCS previously, it is far more easier and straight forward compare to the old method of pen and calculator❞
- **3rd year Veterinary student, FPV UPM**

❝This mobile app is very practical and I felt more confident in judging the BCS of the cattle. I definitely would keep this app in my handphone, as I might need to use it during my ruminant internship soon.❞
- **4th year Veterinary student, FPV UPM**

RECOGNITION

✓ Published on **Google PlayStore**.

✓ **MyIPO Copyright** number **CRLY2023W04324**.

✓ **Gold Medal** & **Most Innovative Award** in UniCeL UniSZA 2023.

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Sekian, terima kasih.

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27.1.2023

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