Virtual farrowing unit – increase piglet survival rate in a game-based setting

Authors: Klit,K.J; Nielsen, C.K; Stege, H

Introduction
Incorrect procedures performed by farm workers or veterinarians can be costly and may jeopardize animal welfare. In the education of both veterinary students and farm workers, practical training is sparse and hands-on clinical skills can be difficult to obtain. Game-based virtual training facilities are interactive and require participation as well as student decisions. Virtual herd visits allow students to practice diagnostic, communicative and interdisciplinary skills in a safe environment. Motivation is secured by use of points, different game scenarios and integration of gaming activities. The combination of interactive knowledge acquisition and motivational factors aim to exploit the learning potential of game based learning.

Materials and Methods
Animal welfare was the overall theme for the first of several game based modules. Piglet survival rate and compliance with Danish legislation were key elements in the first module: "Farrowing unit". Game design and content were described in cooperation between Danish agricultural colleges, University of Copenhagen, pig practitioners, veterinary officers, game developers and didactic specialists. To increase piglet survival, three key areas related to management were identified: correct farrowing assistance, identification and correct treatment of sows with farrowing fever and insurance of an optimal environment in piglet nesting area. Video clips and photographs were collected in pig practice. Golden standards according to Danish legislation were derived from the self-audit scheme provided by the Danish Pig Research Centre.

Results
Game design uses a mix of animation and real photos/videos. Students engage in playing as the newly employed farm worker, responsible for the farrowing unit. Upon entrance into the farrowing unit, the manager of the farm introduces the player (student) to tasks related to the unit. Subsequently, the player must plan tasks in a logical order. The tasks include: farrowing assistance, allocation of nest building material, training of piglets to use nesting area hereby insuring an optimal piglet environment , iron injection, castration, tail cutting and finally a replacement sow must be chosen as too many piglets are live born. All tasks must be performed correctly and in the right order. The point system is a dynamic piglet survival barometer where mistakes cause piglet survival rate to decrease.

Conclusion
The game provides a virtual farrowing unit where students must communicate with other farm personal, keep track of time and procedures and perform correctly. By adding new tasks during the game and by the stress caused by the

piglet survival rate barometer, players will stay motivated and challenged throughout the game.