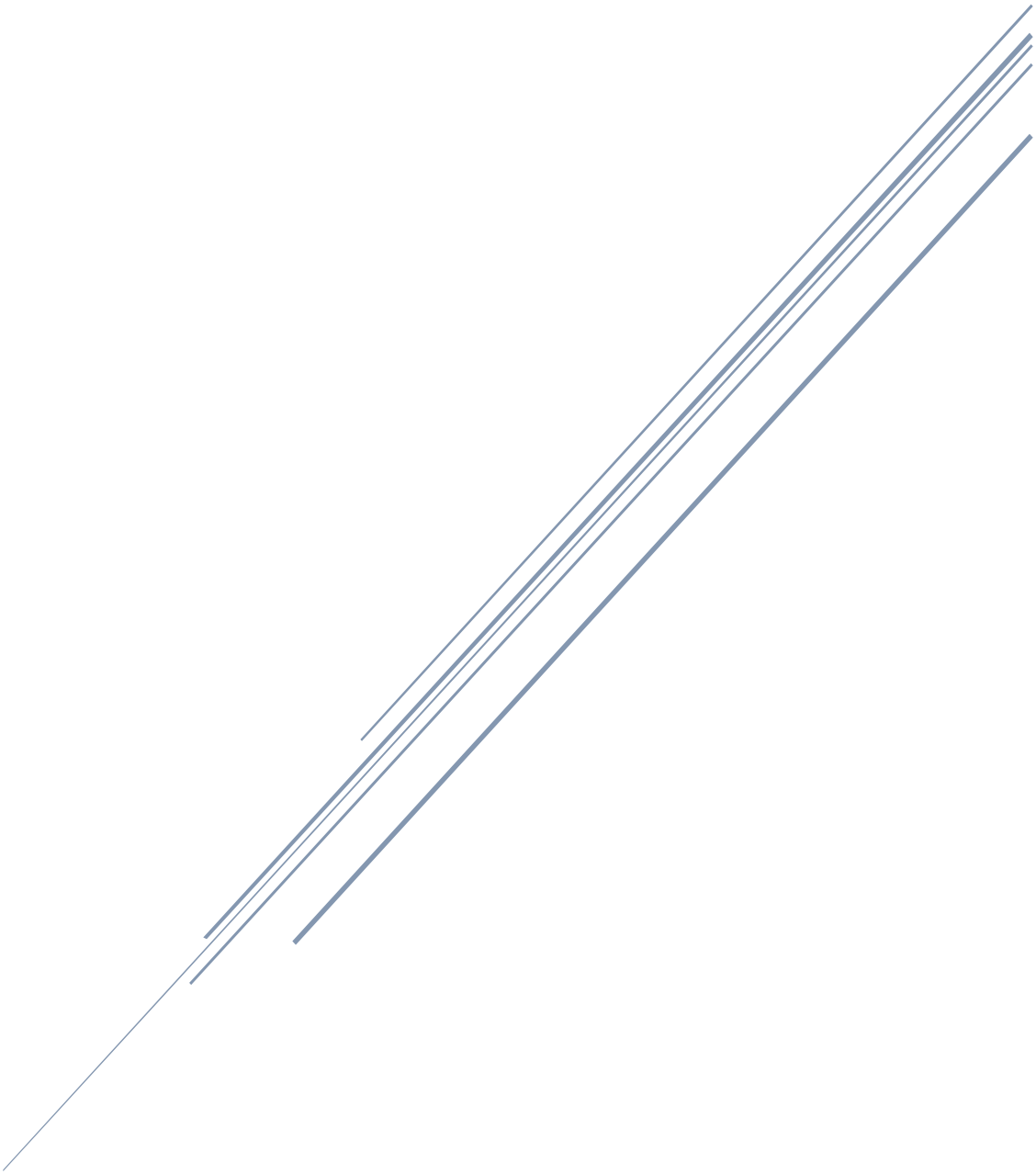
Blueprint for creating content in the outbreak investigation game



OIG

Erasmus+

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1 INTRODUCTION

1.1 DESCRIPTION OF THE OUTBREAK INVESTIGATION GAME

The outbreak investigation game (OIG) is a digital game for teaching investigation of disease outbreaks in animal populations. The game provides an opportunity to apply the steps of an outbreak investigation and will promote understanding and allow application of epidemiological concepts in a real-life setting. This will provide students with necessary analytical skills to handle demanding situations, make a timely diagnosis and take appropriate actions in outbreaks that can cause disasters in animals. The game can also be used to promote life-long learning, encouraging veterinarians to stay updated even after their veterinary training has ended.

1.2 PURPOSE OF THE BLUEPRINT

The purpose of this blueprint is to guide teachers that are making content in the outbreak investigation game to make a plan for their content including the learning outcomes that are expected after playing the game. The blueprint can also be used as an overview of the learning outcomes for a given game scenario and to support the assessment. For the OIG, a suggested list of possible learning outcomes to select from is provided (Table 2). However, other learning outcomes may be added to (or removed from) this list.

2 BLUEPRINT

2.1 DEFINITIONS

An explanation of terms that are used in the blueprint are shown in Table 1.

Table 1. Terms and definitions

Term	Explanation
OIG	Outbreak investigation game
Game scenario	A game scenario is an exercise made up of either a case lesson, a patient simulator or both in combination.
Case lesson	A case lesson is the part of a game scenario that is built up of pages with questions and guides the student through the game. The case lesson can be combined with the simulator, or it can be used alone.
Simulator	The simulator is the part of the game scenario where the student chooses different actions and interacts with the patient(s) and owner.

2.2 LIST THE LEARNING OUTCOMES

The MediOppi learning system offers a wide range of possibilities and a high level of flexibility. Therefore, games can be built for several different purposes in different parts of veterinary education. This in turn means that different game scenarios might have different learning outcomes, and they may target students at different knowledge levels or in stages of their education. Bloom's taxonomy is well known by teachers in higher education and has been used as a framework for assigning learning outcomes to different levels for several decades. Thus, using this framework can aid teachers in structuring and planning their game scenario to be fit for purpose. A visualization of Bloom's taxonomy is shown in Figure 1.

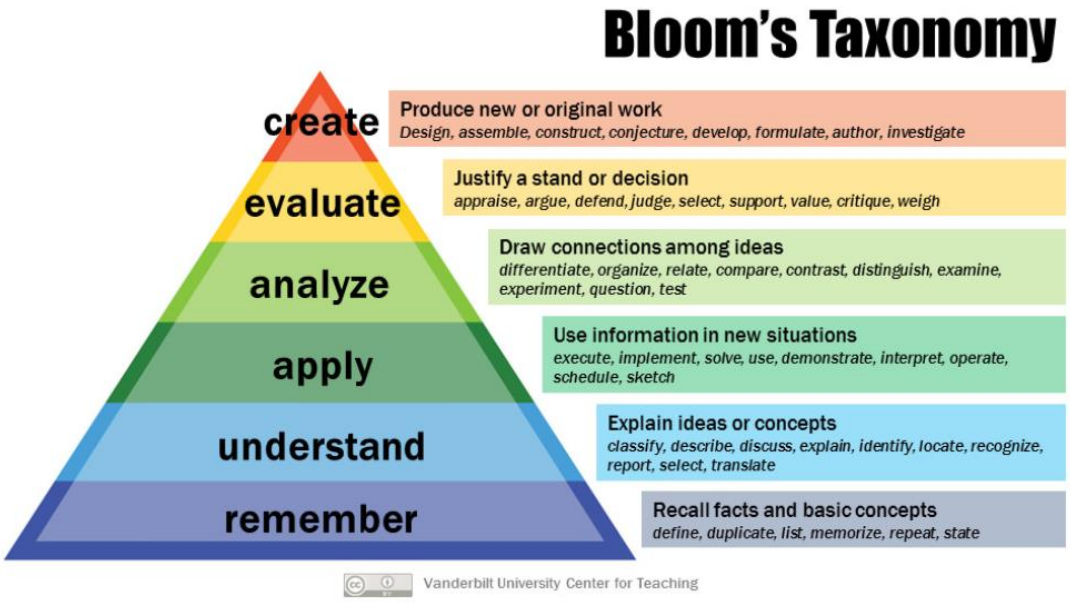

Figure 1. Bloom's taxonomy showing the different levels of understanding

In the outbreak investigation game, a list of possible learning outcomes for the game scenarios can be found in Table 2, where each learning objective has been mapped against Bloom's taxonomy (Fig 1). Some outcomes can be removed or more outcomes can be added to a single game scenario, depending on the knowledge and level of the students.

Table 2. Learning outcomes of the Outbreak Investigation Game mapped against Bloom's taxonomy

Learning outcome	Remember and understand (K1-K2)	Apply and analyze (K3-K4)	Evaluate and Create (K5- K6)
Apply clinical reasoning based on previous studies to effectively select animals for examination and integrate this information in the investigation of a possible outbreak		X	
Ask appropriate questions and utilize epidemiological data in an outbreak investigation.		X	
Make an initial case definition and develop it.		X	X
Differentiate between sporadic cases and a disease outbreak.	X	X	X
Define the population at risk.		X	
Make a list of differential diagnoses.		X	X
Choose appropriate sampling strategies interpret and apply the results.		X	X
Choose the most likely diagnosis based on the investigation results.			X
Take appropriate actions in a relevant order during investigation.		X	X
Take actions in different veterinary roles adhering to the animal disease regulations at national and international levels.		X	X
Formulate preventive measures to avoid the spread of disease.			X
Make decisions in complex scenarios and use critical thinking.		X	X

When making a game scenario the different parts and questions can be mapped against Bloom's taxonomy. For teachers interested in doing this Table 3 can be used as a template.

Table 3. Mapping of content according to Bloom's taxonomy

Learning outcome	Remember and understand (K1-K2)	Apply and analyze (K3-K4)	Evaluate and Create (K5- K6)
Case lesson E.g. Question 1 – 4 E.g. Question 5 – 7 E.g. Question 8 – 9 Patient simulator			

2.3 THE STEPS OF OUTBREAK INVESTIGATIONS

In the outbreak investigation game, the game scenarios are, as given by the name, focused on outbreak investigations. When making scenarios for this purpose, it might be useful to think in a stepwise approach, commonly known as the different steps of an outbreak investigation (Table 4). The investigation process includes everything between collecting information and writing a final report.

Table 4. The eight steps in an outbreak investigation

Step
1. Recognize a possible outbreak
2. Define a case
3. Find cases and collect information, "who, when, where?"
4. Develop working hypothesis
5. Test hypothesis (if relevant) with observational studies
6. Further diagnostics and additional studies
7. Communicate results including outbreak report
8. Suggest (preventive) measures

3 CONCLUDING REMARKS

This blueprint is not a recipe for the software platform used in the OIG.