Problem Posing Pro-Forma :use of resources (videos and photographs)

Assumption
A numerical or maths problem has multiple solutions or none, it is framed as an open-ended question. There is no clear path to the answer – students cannot easily use a formula. Within the problem students are often given too much information or not enough

Activity Name: How many apples?

Read the following problem and then play the video which will have some useful supports on how to solve.

One year, an apple tree delivered a lot of apples and you decided to pick them all. On the first day, you picked the apples that were reachable from the ground. On the second day, you fetched a small ladder and again picked what was reachable. On the third day, you picked what was reachable from a longer ladder. At this stage, 14 apples were left and they were picked on the fourth day using ladders and other equipment.

It became apparent that on the first day you had picked half of the apples on the tree. On the second day, you had again picked half of the apples left on the tree, and the same happened on the third day.

If there was an odd number of apples, you picked until the amount of picked apples were bigger than the amount left on the tree.

How many apples could you have counted on the tree before starting to pick the apples?

Be careful - there may be more than one solution!

1. Expected duration of activity: 20 - 25 min.

2. What EQF level is the activity (approximately)? Everybody

3. What is the topic? Problem solving - mathematical thinking

4. What are the Learning Outcomes? - To work with different strategies solving the problem and maybe make a hypothesis.

5. Prerequisite/prior knowledge assumed? If the students have tried to work backwards solving a problem, it will be quite simple for them to solve this. But you can always ask 'what if there were…..apples?' or 'if you are supposed to leave ….. apples on the tree, how many are you then going to pick from the beginning? Etc…..

6. In what ways does the problem, or the way the problem is delivered to the students:
   - encourage critical way of investigating and thinking? yes

   - encourage analysis? yes

   - allow students to be creative? yes

   - allow independent learning? yes

   - allow for co-operative learning? Yes - indeed

   - allow students time to think? Yes - indeed

   - have a relevant or interesting context? Yes

   - allow for multiple ways of solving or investigating the challenge? yes

7. Resources or materials required? Pc/mac and a projector or a tablet/phone where you can watch the video

8. What technology is required in the delivery of the problem? none

9. What technology might potentially be required in the solving of the problem? A CAS-program, spreadsheet or calculator

10. Suggestions for delivery: The students may record their mathematical thinking to make it easy for everyone to listen to different ways of solving the problem.