# How to Start Seedlings Using Eggshells

## Introduction:

Eggshells contain many nutrients which, if used for gardening, can greatly benefit and enrich the growth and development of plants. Incorporating this concept into a simple method for starting seedlings indoors, this tutorial explains how to start your own seed growth using eggshells as temporary planters.

## What you'll need:

-Egg
-Metal spoon
-Nail
-Potting soil
-Seeds
-Spray bottle
-Pot for planting

## Part One: Preparing the Eggshell

1. Hold the egg in your hand, and using the edge of a metal spoon, crack the top portion of the egg (approximately one third of the way down from the top of the egg). Once you have initially cracked it, turn the egg while continuing to hit it with the spoon so that the crack extends all the way around the egg. *{Refer to Figure 1}*
2. Remove and dispose of the top, smaller portion of the egg and pour out the contents of the egg. Keep the larger portion of the eggshell to use for planting.
3. Rinse the eggshell in a sink.
4. Gently dry using a paper towel, focusing on the outside of the egg.
5. Using a nail, carefully puncture the bottom of the eggshell to create a hole (this is so that the water can easily drain out of the shell and prevent the seed from drowning). Continue to repeatedly puncture the hole with the nail, slowly expanding the radius to about the size of a head of a pin. *TIP:* Hold the nail with your dominant hand, and in your other hand gently, but firmly, grip the egg. You will need to force in the nail, but as long as the hand holding the egg is careful, you will not break it. *{Refer to Figure 2}*

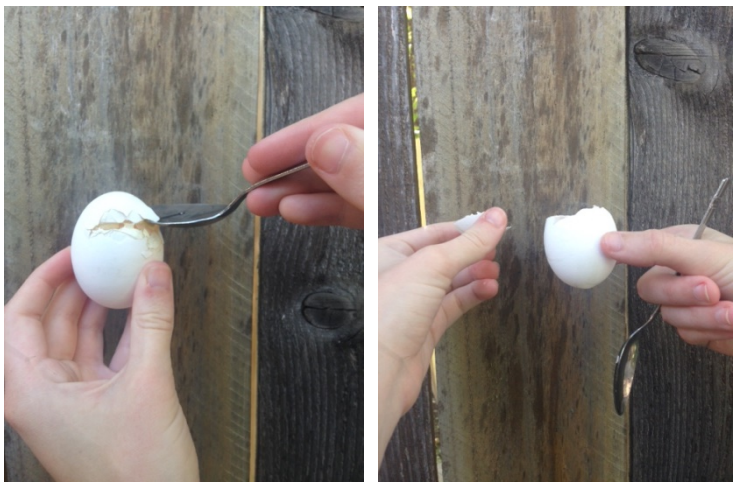

Figure 1: Cracking the egg

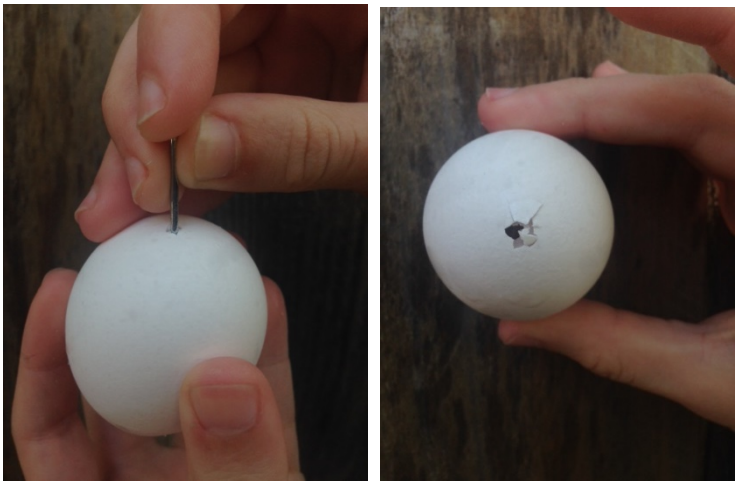

Figure 2: Puncturing the hole

## Part Two: Planting the Seed

6. Fill most of the eggshell with soil. *{Figure 3}*
7. Using your index finger, gently form a small indention in the middle of the soil. Check the instructions on your seed packet to find out how deep you should make the indention. *{Figure 4}*
8. Place a seed into the indentation of the soil. *{Refer to Figure 5}*
9. Top off the seed with a layer of soil.
10. Gently shake the egg to evenly disperse the top layer of soil.
11. Place in an empty carton; repeat as many times as desired to obtain a collection of eggshells containing seeds in soil.
12. Water the seed using a spray bottle so that the soil is sufficiently damp (mist approximately 10 times).
13. Place carton next to a source of natural light.
14. Over the next week or so, water the soil within the eggshells using the spray bottle daily, and rotate carton when needed to help promote even growth.

## Part Three: Transferring the Sprout

15. Once sprouts have grown large enough to transfer, fill a pot with soil to about 1 to 2 inches from the top. Scoop out an indentation in the middle of the soil large enough for the egg to fit comfortably (Or if you would rather plant the sprout outside, dig a hole in soil).
16. Using the palms of your hands, gently crack the eggshell casing. Continue cracking with your hands until the eggshell is separated into fragmented pieces while still supporting the soil and sprout. *{Refer to Figure 6}*
17. Place the sprout, along with its cracked casing, into the pot. Make sure to adjust the eggshell so that the roots of the seed have access to soil. *{Refer to Figure 7}*
18. Fill with soil to cover the eggshell, leaving the sprout open to air and ready to continue its growth. *{Refer to Figure 8}*
19. Continue watering the sprout as needed until the plant has fully grown.
20. Once your seedling has developed to maturity, harvest and use however you see fit.

Figure 3

Figure 4

Figure 5

Figure 6: Cracking the eggshell casing

Figure 7

Figure 8

To: Professor Kelm and fellow students
From: STUDENT
Subject: Usability Test Report
Date: April 6, 2016

**Statement of Purpose**
This document is intended to present information on the results and implications of usability testing conducted on instructions for planting a seed in an eggshell.

**Summary of Test Findings**
Usability testing was conducted in order to see how easily the instructions written on using eggshells for growing seeds could be followed by readers. Participants of the test consisted of a handful of classmates. In order to fully understand whether or not the document would be successful in its goal of clearly guiding the reader on performing the task of planting a seed in an eggshell, usability test must be conducted and observed. This gives the writer new insight and an opportunity to note areas of the instructions which may be difficult to follow. By conducting these tests, it became aware that certain areas of the document needed more clarity while parts of the experiment were simply difficult to do, no matter how clear of instructions were provided.

**Instruction Overview**
The purpose of the instructions entitled "How to Start Seedlings Using Eggshells" is to help direct readers on how they should go about growing seeds using eggshells. The goal for anyone reading these instructions is that they would be able to easily follow the steps and be able to successfully plant a seed within an eggshell, and within a week or so, have a sprout growing from said eggshell.

The audience for these instructions may include a wide variety of people, including anyone interested in gardening or trying to learn the basics of growing vegetation indoors. Other potential audience groups could include anyone looking for a fun, simple activity or perhaps someone who is trying to entertain or educate children on seed germination and growth. All of these potential audience groups have a common interest in pursuing a simple activity with the hope of growing a plant by means of recycling eggshells. The potential scenario that the audience may not be experienced in gardening leads to a more informative and thorough explanation of procedures within the instructions. This makes it so that it is not necessary for the reader to have previous knowledge on the subject of gardening or seeds to be successful in undertaking this project. Incorporating pictures within the document would be of benefit for any reader, and would be especially helpful if children decide to undergo the project. These instructions are primarily meant for an indoor environment (with access to a sink) that can be easily cleaned. Although it is possible for readers to take this project outside, especially regarding the last steps in the growing process, they would only do so on a sunny day so there is no need to make these instructions weatherproof.

**Methods**
Methods used to collect data on the usability of the instructions consisted of having a couple of classmates read and follow the set of instructions during class time. The participants followed the

instructions with the necessary materials easily accessible to them, but a few alterations regarding procedures not possible to complete in a classroom environment had to take place (for example, pouring water from a water bottle into a small container for a sink). The testing was limited to a fifteen minute window and an observer watched, while taking notes, as the participant performed the task. Study limitations in this environment of testing include the potential lack of interest in gardening that a typical reader most likely possesses, as well as the unusual circumstance of precise materials being provided for the participant. These limitations do not severely impact the helpfulness of the usability test, however, and the information gained from observing the tests is still legitimate in helping to improve the instructions.

**Discussion of Findings**

Many aspects regarding the level of effectiveness of the instructions were noted from observing the usability tests. Understanding of the procedures varied throughout the document; some steps were more straightforward than others and thus easier to follow. All of the participants moderately struggled with the cracking and separating of the egg due to the poorly worded steps for that part of the project. This resulted in an elongated period of time dedicated to this step, which was not expected. The step which involved poking a hole for drainage in the bottom of the empty eggshell using a nail proved difficult for users as well. This part took more time than was intended due to the participants' hesitancy with trying to complete the task without cracking the entire eggshell. Users commented that this step is inherently difficult, and that no revision could help in making it easier to complete.

Other areas of confusion arose near the final steps of the experiment. Once a sprout has grown from the seed after a few days from the initial planting, the reader is instructed to crack the eggshell casing and place the both the sprout and the surrounding, now cracked, eggshell into a pot for further growth. Most participants struggled with following this step, and I had to provide additional verbal instructions to help them complete the transfer of the sprout into the pot successfully. This step did not have a picture corresponding with it, and users commented that adding a picture would have clarified the confusion they experienced regarding this step.

Users were gracious in complimenting the design and aesthetic appeal of the report. They also noted that, generally, the pictures were helpful in completing the task. The instructions are laid out so that the steps are on the left and a collection of pictures are located together on the right side of the page, without a clear correlation between which step involves which picture. Users suggested that notations should be added to the step corresponding to each picture, informing the reader that they can refer to a visual of that specific step if they look to the right for a certain labeled picture.

**Revision**

Based on feedback from users and other various issues identified during testing, revisions were made to the set of instructions with the hopes of alleviating these issues for future readers. Steps regarding the cracking of the egg were rewritten to clarify any confusing phrasing. Notations were added to the steps corresponding with pictures in order to guide the reader to that specific visual reference to help them gain further clarification into what was expected of them for that step. Pictures involving the last steps of cracking the eggshell while transferring it to a more spacious pot were also added as advised. A list of

materials, which was negligently forgotten for the first draft of instructions, and introduction paragraph to help set the scene and inform readers on the general idea behind this project were also added to enhance the instruction's ease of use and understanding.