Schools Animal Ethics Committee
Operating Procedure

STANDARD OPERATING PROCEDURE FOR TEACHERS ABOUT CHICKEN HATCHING

Introduction
Chicken hatching using incubation equipment in a classroom is a common activity undertaken in schools and can be a very rewarding educational experience for students. This activity can sometimes lead to disappointing results and raise a number of animal welfare issues. These procedures were developed to assist schools to avoid issues and make chicken hatching a successful activity.

The welfare of chicks must be the first consideration and alternatives to this activity need to be considered before deciding to conduct a chicken hatching activity.

Some alternatives could include:

- using chicken life cycle 3D models;
- various multimedia documentaries; or
- farm visits.

All schools must consider the 3Rs of animal welfare:

- **replacement** of animals with other methods (alternatives);
- **reduction** in numbers of animals used; and
- **refinement** of techniques used, in order to reduce adverse impacts on animals.

These principles must be applied to all activities involving the use of animals and should drive decision making in the classroom and the school.

Scope
This information applies to all situations where incubators are used to hatch chickens in school buildings.

Objective
The objective is to ensure chicken hatching in the classroom is a successful activity and that the welfare of chickens meets appropriate standards.

Planning and preparation
There are a few private businesses that specialise in providing all the materials, equipment and advice for chicken hatching activities in schools and this includes re-homing the chicks after the activity. Schools should give preference to businesses that supply the eggs at Day 18 or 19 of incubation as this reduces the risks associated with incubation. Contact the Schools Animal Ethics Committee (SAEC) for details of suppliers if you would like to pursue this option.

Approval for Chicken Hatching Activity
Schools must have prior approval from the SAEC to conduct chicken hatching and brooding activities. The application form and a sample, completed form are available on the SAEC website. Approval may be for a 3 year period if requested.

Sourcing Quality Eggs for Hatching Chickens
Natural fertility is rarely 100% - it may vary with season, condition and type of birds. You might be safe to expect that around 75% of the fertile eggs will hatch, though 90%-100% hatches can and do happen.

Both the fertility of eggs and the hatchability of those that are fertile are influenced by the management of the flock they came from. To produce top quality fertile eggs, poultry must be healthy and be managed so that each hen is regularly served by a fertile rooster. Most eggs that you purchase from the local store are not fertile.

Success also depends on starting with clean, fresh eggs. Washing eggs can dramatically reduce an egg's viability by removing its protective bloom and providing an opportunity for germs to infiltrate the shell. If you must wash an egg, do it gently and quickly using a damp cloth and dry the egg well before storing correctly.

For optimal fertility, eggs that have been stored at room temperature pointy end down, rotated daily, and are less than 7 days old are best. Never handle eggs roughly or with dirty hands – use clean, dry hands and a gentle touch. Fertility of eggs cannot be determined before incubating them. After 5-7 days, white-shelled eggs can be candled to see if embryos have developed. If there is no sign of development by day 10, discard any "clears".

It is preferable to pick up the eggs you plan to incubate directly from the supplier. Wherever you source them from, allow the eggs to warm to room temperature for 24 hours before setting them in the incubator. Only incubate the minimum number of eggs to achieve the educational outcomes.

Incubator Preparation for Hatching Chickens

There are many makes and models of incubators available and they vary greatly in price, quality and user-friendliness. It's recommended that you seek advice before you choose one to ensure you get a reliable incubator with the right features.

Arrangements for equipment supplied by a commercial provider need to include:

- confirmed dates for the start and conclusion of the activity;
- delivery and return of materials and equipment;
- responsibilities for setup and monitoring of equipment;
- directions and instructions for use; and
- cleaning and maintenance.

Ideally, you should run your incubator for a few days before setting your eggs in it. Some, particularly those with an electronic temperature control, appear to need this time to "run in" after which they stabilize. If time is short, at least 24 hours is advisable.

ALWAYS FOLLOW THE MANUFACTURER'S DIRECTIONS when setting up and operating your incubator. However, don't rely on the manufacturer's thermometer without first checking its accuracy. Check your incubator temperature with an accurate thermometer. Temperature readings are best taken away from the source of incubation heat and at the same level as the tops of the eggs.

Sanitizing Your Incubator

Poor sanitation between batches of incubating eggs can result in infection and death during incubation or after hatching chickens. If the incubator is hired, then the supplier should ensure that it is sanitized before it is supplied to the school.

You will need to be careful to avoid immersing any electrical or other working parts in water and just wipe them clean with a dry cloth. After wiping, spray them lightly with an alcohol solution which effectively sterilizes then evaporates completely away. The floor of the incubator as well as hatching trays and water pans get the dirtiest and

warrant thorough cleaning and disinfection with a weak bleach solution (unless otherwise instructed by the manufacturer).

Locating the Incubator
Appropriate location of the incubator is paramount particularly in a classroom full of students. Because temperature control is the single most important factor to successfully raising chicken eggs, you need to protect your incubator from extremes of temperature in the immediate environment. This helps it to maintain even temperature conditions for hatching chickens from incubating eggs.

Locate your incubator in a room where it is out of direct sunlight, away from draughts and shielded somewhat from outside temperatures by being placed on an inside wall. Ideally, room temperature should be a reasonably steady 21 to 24° C.

Fate of Chicks at the end of the program
Proper consideration for relocating the chicks at the end of the program must be considered prior to commencing the activity. This should include planning for relocation of male chicks (roosters) for which special considerations may apply. The fate of the chicks must be included in the proposal to the SAEC and any change to this aspect of the proposal must be advised.

Occupational Health and Safety Considerations
The power supply and electrical equipment must be tested, reliable and well maintained. It is useful to have a backup supply of power accessible if the main power supply is interrupted.

There is a very small health risk of Salmonella when dealing with chickens. Staff and students must wash their hands before and after handling eggs and chicks.

OPERATIONAL PROCEDURES

Staff skills and experience
Classroom teachers may conduct egg hatching and brooding activities in the classroom as long as they have:

- competency in the particular procedures; or
- have access to a suitably experienced person able to provide advice on set up of appropriate hatching and brooding facilities and handling of eggs and hatchlings.

Either the classroom teacher or another responsible person must be appointed to monitor the incubator and brooding areas. The designated person will be responsible for:

- sourcing suitable fertile eggs and hatching and brooding equipment;
- setting up the incubator the day before eggs are introduced;
- monitoring the temperature and humidity of the incubator;
- removing chicks and shells from the incubator when the chicks are ready to be moved;
- checking the brooding area daily, topping up the water and feed and general cleaning; and
- relocating the chicks at the end of the activity.

Teachers conducting egg hatching and brooding activities in the classroom must have:

- conducted risk assessments on the procedure/s to be carried out;
- found the procedure/s to be safe and humane considering animal and student welfare;
- considered the maturity and suitability of the student/s involved in the activity; and
- ensured student access is supervised at all times.

Teachers should ensure that students and visitors are provided with adequate prior instruction in specific activities to enable appropriate care of the egg and hatchling to minimise risk of undue stress or harm.

Incubation

The incubator must be set up and stabilised according to the manufacturer or suppliers' instructions. Once the temperature in the incubator has stabilized, allow any stored eggs to warm gradually to room temperature before putting them in. Set your eggs in the incubator either on their sides, or pointy end down. Chicken eggs should hatch in **21 days**, though some may hatch a day or two early and some a day or two late. A "day" is counted as a full 24 hours, so Day 1 would be the first 24 hours after setting the egg, Day 2 the next 24 hours etc. If you set eggs on a Monday, it's usually a safe bet that they will hatch on a Monday, 3 weeks later.

Successfully hatching chickens that are healthy depends completely on maintaining a controlled environment for the entire period of incubation.

Turning Eggs

The eggs must be turned daily for the first 17 days incubation to prevent the embryo from sticking to the shell. Turning is discontinued for the last three days of incubation of eggs.

Saving Incubating Eggs or Chicks During a Power Failure

A power outage does not necessarily mean death for your incubating eggs. If you act quickly to prevent your incubator from losing heat, there is every possibility that the batch can be saved. Insulate your incubator immediately the power fails using blankets.

In the event of a power outage when chicks are in the brooder box, place another source of heat such as a wrapped hot water bottle (if available) in with the chicks. If the power outage is likely to be sustained, **your best insurance is a backup power source.**

Hatching of chicks

Pipping is when the hatching chickens begin to peck through their shell. It can take up to six hours for the chick to fully emerge, and a further six hours for it to dry, fluff up and begin to move about.

Since the chicks have reserves of yolk to draw on, they don't need to eat or drink for the first 24 hours after hatching and can be left in the incubator until the stragglers have had a chance to hatch. Any that haven't hatched within 24 hours of the first hatching chickens are usually weak and unhealthy. If they don't make it out on their own they are likely to be weak and die anyway later on.

Brooding and Rearing Chicks
After the chicks hatch allow them to dry off and fluff up in the incubator before moving them from the incubator to a heated brooder box. The heated box should contain a 40-watt light bulb lowered to within 150 mm from the bottom of the box. Ensure the brooder is big enough so that the chicks have room to choose the most comfortable temperature by getting closer to or further from the globe. Keep the box safe from cats and other predators in a draft free, warm environment.

Feed and water must be available at all times from the time they are out of the incubator. Chicks need to be fed a chick starter ration. Water receptacles are a problem with baby birds during their first week as chicks can easily fall into water dishes and drown. Use a shallow water cup to avoid this problem.

Brooding of chicks in the classroom should not exceed 12 days after hatching before they are returned to the supplier or relocated to a suitable facility.

Handling of chicks
Hatchlings should only be handled by competent staff members in the first few days. If students are assisting a teacher during routine maintenance of the chicks housing, chicks must be transferred from the brooder to a holding box or crate. This will minimise stress placed on the chicks from students unnecessarily handling them for long periods. In any circumstance, hatchlings are only to be handled for a short amount of time, as chicks easily overheat.

Teachers will provide students with information on appropriate methods of handling and caring for the eggs, the egg hatching process and the hatchling brooding procedures (teachers' discretion will be used for all handling activities). Activities relating to life cycles and the hatchlings' needs will be undertaken with students.

Clear and careful instructions and staff modelling will encourage student understanding of the needs of the chicks. Students will develop some understanding of their ethical and legal responsibilities when observing the hatchlings.

Monitoring (including weekends and holidays)
Skilled staff must undertake frequent and regular monitoring of eggs and chicks, at least twice daily including arrangements for weekends and public holidays. To minimise the stress of relocation, it is recommended that chicks stay in the classroom over the weekend, with staff coming in to check on the chicks twice daily. If this is not possible, then chicks should only be transported in a secure brooder box, designed for safe travel, that does not require the chicks to be handled or removed from the box. Chicks are to be kept securely away from household pets.

Consideration to room temperature needs to be given during the months of November to April, especially over weekends when the air-conditioning may not be turned on. Brooder boxes are to be placed in a secure, cool position away from windows and sunlight.

Staff responsible for the care of chickens must be aware of the signs of ill-health and distress. If the chicks are showing any signs of ill-health, deformity or distress the school must seek advice from a veterinarian. If euthanasia is required, this should be undertaken away from view, by someone with veterinary skills.

Rehoming and or relocation of the chicks
Plans must be made in advance for appropriate care of the chicks at the completion of the activity. This matter should also form part of the ethical discussion with

students about animal use, stewardship, animal welfare and fate of the chicks post activity. All broiler breeds must be returned to the supplier at the completion of the activity as they are bred for meat production and unsuitable for rehoming to backyard and schoolyard chicken coops.
At the end of the 'brooding' period, from hatching to twelve days old, the chicks should be:

- returned to the supplier; or
- rehomed to a local 'hobby farmer' or free range chicken property that has safe and suitable housing for the chicks; or
- rehomed to a section of the school that has facilities for safe and suitable housing and care for the chicks; or
- rehomed in groups of 2+ to suitable local residents.

It is recommended that if the decision is for hatchlings to be rehomed, it must be in at least pairs. Chickens are flocking animals and should not be housed as solitary birds. Chicks that are sick, injured or deformed must not be rehomed. At this stage of their development, there is no indication if the chickens are going to be hens or roosters without specialist examination. If they are roosters, they may not be allowed in urban backyards because of Local Authority regulations.

A signed written agreement and assurance that facilities are adequate needs to be received from the parents/guardians before chicks go to student's homes. See appendices A and B.

Animal emergency arrangement

The school must have an emergency management plan to deal with events in and out of school hours. Details of the plan will vary according to the needs of each school.

These plans must include:

- monitoring of animals, including weekends and school holidays;
- at least one local veterinarian on call; Costs incurred are the responsibility of the school; and
- people trained to euthanase animals. The first point of contact should always be a veterinarian. The only exception to this would be trained staff at specialist agricultural schools who may be considered on a case by case basis, upon enquiry to the SAEC Executive Officer. No advice should be sought from the egg supplier.

Animal deaths

Any deaths of animals from adverse or unexpected events on a school site must be reported to the SAEC. Deaths due to unsuccessful hatching, obvious illness or deformity do not need to be reported. An Illness Injury Death or Unexpected Incident Report (C2) form needs to be completed and submitted.

It may be necessary to prepare for the likelihood to sensitively discuss (age appropriate) what happens with eggs that have failed to hatch, chicks that are frail, weak and dying and situations that may require euthanasia. There are opportunities here to carefully and sensitively relate these important facts of life.

GUIDELINES

The main factors to be controlled during incubation are below.

Temperature

The recommended incubation temperature for chickens is 37.4-37.6°C. The incubation temperature requirement for most hatching eggs is surprisingly uniform. The eggs of almost all domestic bird species (and many wild species) can be incubated at the same incubation temperature. Therefore, eggs of several different bird species can be incubated at the same time within the same incubator.

The recommended temperature within an artificial incubator depends upon the type of incubator being used. If the incubator used has a fan for air circulation, the temperature setting is usually a little lower than for an incubator without an air circulation system. The reason for different temperatures is that circulating air warms all points around the egg shell while still air temperatures are warmer at the top of the egg than at the bottom. The corners inside incubators are often cooler than the centre. It is therefore advisable to operate your incubator at no more than 2/3 capacity, and cluster your eggs near the centre of the unit.

Embryo development is very sensitive to temperature. While sustained slight under-heating may simply cause them to grow slower, over-heating even for a short period can cause significant injury or even death. As a guide, your incubating eggs are unlikely to survive sustained temperatures over 40°C or under 35°C.

Humidity

The humidity of the incubator environment affects how much moisture is lost by the incubating eggs during incubation. The more humid it is, the less moisture - and therefore weight - loss occurs. Humidity is created inside an incubator by the use of water trays. Remember to always use lukewarm water when filling them.

Soon after an egg is laid, a small air bubble forms in the large end under the shell. A membrane separating the mass of the egg and the air bubble moves back and forth to relieve stress and pressure on the embryo resulting from changes in temperature. The drier the outside air is, the more fluid is depleted and the faster the bubble grows. Correct humidity in the incubator insures that the bubble does not grow too big, depleting essential fluids, or deny the chick enough air by remaining too small.

The importance of correct humidity is more apparent at the end of incubation. The normal condition is that the air cell has enlarged to the point where the chick can reach its beak through the membrane wall, allowing it to breathe, before it pips through the shell, after which it will "zip" around the shell. If humidity has been excessive, the chick may pip internally into the air cell and drown in excess fluid. On the other hand, if humidity has been too low, the air cell will be oversized and the chick may be "shrink wrapped" in the inner membrane and unable to hatch.

The humidity in an incubator can be measured using either a Wet Bulb Thermometer or a Hygrometer. However, since air flow is necessary for their operation, neither give reliable readings in still air machines. Luckily, unlike with temperature, precise humidity control is not critical to successfully hatching chickens, which is just as well as it is very difficult to achieve in portable incubators.

For hatching chickens, desirable humidity during the first 18 days of incubation is around 50% to 55% Relative Humidity. Most incubators have separate trays to be filled at these different stages of incubation, so in the absence of measuring humidity, follow the manufacturer’s directions.

Ventilation

Embryos inside incubating eggs need oxygen which they get via their shell from the air around them. For this reason, it is important to ensure adequate ventilation by checking that the ventilation holes in your incubator are not blocked. The amount of

oxygen needed increases as the embryo develops and adjustable vents should be fully open by hatching time.
Note: While these factors are all important, the **most critical of these is temperature**, followed by humidity. When incubating eggs fail to hatch these two are the first that should be ruled out as the cause.

Positioning of Eggs

An incubating egg could set in a normal position as it would on a flat surface; that is with the large end slightly higher than the point, or upright in egg cartons/turners, with the fat end of the egg always up. An egg that persistently has the small end elevated may cause the embryo to be positioned with the head toward the small end. In this position, the chick is likely to drown on pipping. Therefore, it is quite important that in general, the large end of eggs should be slightly higher than the small ends; or as they would lie naturally on a flat surface.

RELEVANT LEGISLATION AND POLICIES

Animal Welfare Act 2002 (WA)

Australian code for the care and use of animals for scientific purposes 8th edition

For Department of Education schools the *Use of Animals in Schools Policy and Procedures* apply.

ABOUT THE SCHOOLS ANIMAL ETHICS COMMITTEE

In Western Australia the use of animals for scientific purposes, including teaching the science curriculum in schools, requires a licence under the *Animal Welfare Act 2002* and approval of teaching activities by an animal ethics committee.

The Schools Animal Ethics Committee (SAEC) is responsible for ensuring that the use of animals in schools and colleges complies with the *Animal Welfare Act* (2002) and the National Health and Medical Research Council's *Australian code for the care and use of animals for scientific purposes* (8th Edition 2013).

The SAEC is jointly supported by the following institutions and services their associated schools and colleges:

- The Department of Education (DoE)
- Association of Independent Schools of Western Australia (AISWA)
- Catholic Education Office of Western Australia (CEWA)

To contact the SAEC please phone the Executive Officer for the relevant sector as follows:

- Department of Education schools: Amanda Hillerich 9402 106
- AISWA schools: Glenda Leslie 9441 1628
- CEOWA schools: Marion Cahill 9380 5305

APPENDIX A

Suggested Letter to Parents/Carers
Attach APPENDIX B: Before you agree to adopt chicks, please consider the following (form).

Dear Parent/Carer,

Thank you for offering to adopt chicks

(insert details of class and teacher in charge of the activity)

This letter is to advise you of your responsibilities when adopting chicks. According to the Western Australian *Animal Welfare Act 2002,* a person in charge of an animal has a duty of care to that animal and must take all reasonable steps to ensure that the animal's needs are provided for as follows:

1. Provision of food and water
2. Provision of appropriate accommodation or living conditions
3. Freedom to express normal behaviour
4. Treatment of disease or injury
5. Appropriate handling of the animal to avoid causing fear and distress.

Once the chickens are in your care, it is your responsibility to ensure that these needs (based on the internationally recognised 'Five Freedoms' of animal welfare) are met.

Please ensure that you understand all necessary care information and that you are able to adequately house and care for the chicks on your property, prior to accepting the duty of care obligation.

Parents/Carers wishing to adopt chicks must be aware of their local council's regulations on keeping roosters in their residential area.

To accept responsibility for the abovementioned animals, please sign the section below and return it to the school.

Yours faithfully

Principal

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Please indicate acceptance by completing the boxes below and return to the teacher in charge of conducting the activity:

Name: Insert name of parent/carer	☐	I agree to care for insert number chicks. *A minimum of 2 chicks must be taken.*
Signature: Date:	☐	I have read and understood the information provided and will take all reasonable steps to ensure that the 'Five Freedoms', as listed above will be provided to the chicks.

APPENDIX B

Schools Animal Ethics Committee

Before you agree to adopt chicks, please consider the following:

Does your local council allow you to keep poultry?
Local governments often have restrictions on keeping roosters, the number of chickens allowed to be kept, how close a chicken coop can be located to other buildings and other requirements.

In the early stages of a chick's development, there is no indication if the chickens are going to be hens or roosters without specialist examination. If they are roosters, they may not be allowed in urban backyards.

Check the requirements of your local council before agreeing to adopt chicks.

You must take home a minimum of *two chicks.* Will your pen and backyard be a suitable size?
Chickens are flocking animals and should not be housed as solitary birds.

Can you provide adequate housing for the chicks?
Young chicks must be kept in a heated brooder box, with room for them to grow, until they are fully feathered at approximately 5 or 6 weeks old, or perhaps longer in Winter.

Chickens require a coop that is predator-proof, bird-proof and will protect them from the wind and rain as well as extreme heat and the effects of rapid changes in temperature. The coop should have an area that is dry at all times and provide good ventilation while being free from draughts.

Do you have any other animals that could be a threat to the chickens?
You must be sure that any animals you already own will not be of any threat to the chickens.

Who will look after your chickens when you go on holiday?
You will need to have a plan for monitoring the chickens at least once a day while you are away, this will ensure that they have enough food, and water and are monitored for any signs of illness.