

Practitioner Research Report: Design, Implementation and Review
of a Curriculum Investigation

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In my practice as a teacher in Black Rock Primary School, I was involved with the design, implementation and review of a curriculum investigation. As a result, this report indicates my thinking, planning, implementation, reflection and evaluation of the curriculum investigation.

In my area of practice, I am obliged to observe the Australian curriculum for the learning standards in the State of Victoria – that is, AusVELS [CITATION Vic141 \l 1033]. Hence, my practice should stick to the Victorian standards in the approach to teaching. Furthermore, my subject coverage includes Science, Mathematics, English and History. As the subsequent sections will illustrate, the approach requires an application that also fulfills the standards that the Victorian Early Years Learning and Development Framework (VEYLF) outlines [CITATION Sta112 \l 1033].

The investigation consists of three major parts. In the initial part, the report will describe the school setting of my deployment. Here, the report explains the placement environment; that is, the school, year level and the cultural and linguistic backgrounds of the children. Afterward, the report – in this section, will discuss the curriculum, the content and teaching that supported the children's learning during the week of placement. The following section will provide a thorough analysis of the curriculum implementation. It will include two sub-sections – (1) a review of the curriculum implementation, and (2) a documentation of the curriculum investigation from two perspectives (my perspective as an early childhood educator and that of the children as co-contributors to knowledge).

Finally, in the concluding sections, the report presents a study of the placement experience. The study consists of two sub-sections. The first section discusses how the use of

Bloom's Taxonomy assisted in the evaluation of children's learning. The following sub-section sums up the experience of implementing the curriculum investigation and the overall experience of site placement as an early childhood educator.

School Context

My placement site, Black Rock Primary school is an educational facility in the City of Bayside, a suburb on the coast of Melbourne, Australia. The school's mission statement states that it "*aims to be the most vibrant, passionate, learning community in the City of Bayside*" [CITATION Bla10 \l 1033]. The school is a large community. It has an enrolment of five-hundred and sixty students (560) across the early classes of learning. The school's community aims to create an atmosphere that encourages learning and discovery. To that extent, it demands mutual respect between the staff and among the students. It applies the AusVELS curriculum in an integrated approach, which needs a co-operative effort between teachers to plan and assess the effectiveness of the curriculum.

Hence, under my placement, I co-operated with other teachers through sharing our experiences and planning how to apply the learning requirements in a manner that includes the participation of each student in our respective classes (grades). To that end, we met every Monday in an after school meeting with other teachers to share experiences, which in turn informed our Tuesday meetings where teachers (from the same grade) discussed ways of encouraging learning that is more efficient.

Nevertheless, my placement gave me the chance to teach a class of twenty-one (21) students. The children were between five and six years of age. That is, the children were still at a pre-school age. Although the children have differing cultural backgrounds, they are all Australian natives. While the majority of my class speaks English as the only language – two of them speak

two languages. Of the two, one speaks German and the other Hindi, in addition to Australian English. The rich variety is a result of the two kids' parent status as new immigrants.

On the other hand, my responsibility as an early childhood educator is to implement the requirements of the AusVELS, within the context of the VEYLF. The early years learning framework, reminds educators that education between the initial years (from birth) to the pre-school age (five to six years) are crucial for childhood development [CITATION Aus09 \l 1033]. Thus, my placement allowed me to practice my profession with the purpose of encouraging the children to recognize and exercise their potential.

For example, one my students, a girl with an Indian heritage showed an attraction for perfection. While good, the quality was a cause of several difficulties on her part as she focused on making her art projects flawless. She had a gift for the arts, anyway. Still, without an educator's participation, she would likely suffer from a slow learning progress as she spent more time than any other child on a project did. Constant support, on the other hand, helped her to accept that perfection takes time. It also helped to calm her emotions, because she became emotionally involved in every assignment. Hence, according to AusVELS, the girl, as an example, was a pointer of why early childhood educators should be involved in the development of a child's "social and emotional development" [CITATION Aus09 \p 5 \l 1033] in addition to the essential teaching requirements, like numeracy and literacy. The following section, therefore, will provide a more detailed review of the activities that I started and managed under the AusVELS framework. It will eventually provide a critical review of my overall curriculum experience in Black Rock Primary School.

Review and Design of the Curriculum Investigation

The curriculum investigation took place between the second and third week of my placement. I carried out the activity with the help of my mentor teacher. Consequently, I documented the process using two perspectives – (1) that of the educator (mine), and (2) that of the child (however, from the perspective of the child as a co-contributor to knowledge). The review and design are critical in nature. It describes the success, and conversely, the challenges and shortcomings. As a result, this section has two major subsections. Sub-section one (1) will evaluate how a class on sinking and floating contributed to the children's literacy, numeracy and scientific skills. In the greater context, the sink and floating activity is a complex concept on its own and required a careful observation of the AusVELS in the context of VEYLF. I summarized the approach in a separate attachment that tabulated the link between the two frameworks. In sub-section two (2) the curriculum investigation employed Bloom's Taxonomy to enhance my experience with the children as an educator. In addition, the sub-section's final part evaluates how the children contributed to the learning processes. It assesses their learning and development using various tools and subsequently outlines a summary of the learning outcomes and conclusions.

Implementation

The activities planned to investigate the curriculum required the class to apply, interrogate and subsequently apply (and enhance) their literacy, scientific and numeracy skills. The activities included multiple concepts of buoyancy (sink and float), gravity and heaviness (heavy and light attributes). Accordingly, the major questions that the class investigated were (1) 'why do things fall?' (2) 'Why do some things move more easily than others?' and (3) 'why do some objects sink while others float?' (See the Lesson Plan).

In order to carry out the activities, I assembled different materials for the three learning approaches; that is literacy (activity 1), numeracy (activity 2) and science (activity 3).

Materials for activity 1:

- 1 bucket, large
- 2 balls, one small and one large
- 1 rolling pin, solid and wooden
- 6 toy dinosaurs, solid, varying weights

Materials for activity 2:

- 6 table-tennis balls

Materials for activity 3:

- 1 bowl, small and shallow
- 1 cup, large and deep
- 50 dices

Although, the activities required an investigation of concepts that related to the corresponding learning outcomes, the materials were not strictly reserved for a particular theory; hence, the activities shared the materials from time to time.

Literacy

Literacy learning falls under the AusVELS domain of communication. The domain states, “Successful communication requires students to be familiar with the forms, language and conventions used in different contexts and employ them to communicate effectively” [CITATION Vic14 \p 1 \l 1033]. In addition, the activities related to this outcome appreciate VEYLF’s observation that children are confident, and subsequently involved learners [CITATION Aus09 \l 1033 \m Sta112].

Hence, while introducing the activity, I avoided, at the beginning, from describing what we would do that day. I gathered the materials in the front of the class, all the same, and asked

the class to guess what we would learn. The introduction allowed the class to practice their interest and become more involved in the lesson. Subsequently, I asked the students to classify the materials according to their physical characteristics; that is, were they solid or hollow? Alternatively, were they heavy or light?

Notwithstanding, I explained that the experiment would classify objects into opposite classes based on their characteristics; hence exploring the concept of opposites in literacy.

Implementation and evaluation: as the experiment progressed, the children immersed all the objects into the bucket of water and saw how they reacted. The children observed that some objects sunk while others remained floating. I explained using figure gestures that some objects float ('finger-pointing-up' gesture), while others sink ('finger-pointing-down' gesture). Afterwards, I removed all the objects from the bucket and told them to repeat after me that 'finger-pointing-up' means floating, while 'finger-pointing-down' means sinking. Subsequently, I picked up a plastic ball and asked the class if I immersed it in the bucket it would float or sink.

Using the set signs, I allowed them to answer and defend their answers by explaining using the bucket. One boy replied that the plastic ball would float, and I instructed him to justify his answer. He did so by immersing it in the bucket. When it floated, I explained to the class the differences between objects that float and those that sink, and encouraged them to categorize objects into opposites using buoyancy as one of the standards. Using other objects – solid and hollow ones, I encouraged the students to categorize them. At this point, I left them to do most of the explaining. I observed that some students were not aware of how to assign objects into differing categories. To assist the kids' cognitive development, I suggested that those that could determine the differences should explain to those that had difficulties. Consequently, the students

applied their observation skills to communicate objects' attributes in a group setting; hence facilitating their literacy skills.

Science

Under the AusVELS domain of Design, Creativity and Technology (DCT), students learn to appreciate and “how everyday products and systems work, and how the characteristics of the materials used can influence the look and function of products” [CITATION Vic14 \p 3 \l 1033].

Furthermore, VEYLF expects a curriculum to leverage on the fourth outcome (children are confident and involved learners). Under this outcome, the framework states, "Children develop a range of skills and processes such as problem solving, inquiry, experimentation, hypothesizing, researching and investigating" [CITATION Aus09 \p 35 \l 1033 \m Sta112].

Therefore, I introduced the class to the next instruction to help their science learning. For this experiment, I directed the each of the students to try to immerse table-tennis balls in the bucket of water. It was a lively session where each student shouted that the balls would not go under the water. I then introduced them to a related activity where I told each student to hold the table tennis balls midair and then drop them. For the discussion, I suggested that each student note how the balls reacted in each situation.

Implementation and evaluation: the students explained that the balls were floating on water because of their hollowness. To test their arguments, I asked them to repeat the experiment using the rolling pins. They all shouted that the pins also floated, although they were not hollow. I explained to them that some objects float because of a combination of their physical features. Hence, I stimulated their interest in objects' features that gave varying behavior in different setups.

Numeracy

According to the fifth outcome – children are effective communicators (of VEYLF), “Numeracy is the capacity, confidence and disposition to use mathematics in daily life” [CITATION Aus09 \p 38 \l 1033]. Accordingly, the VEYLF fifth outcome means that educators should facilitate learning and development in the communication domain [CITATION Vic14 \l 1033], in order to enable them to recognize and apply symbols (for instance, numerals) in effective communication.

Accordingly, I introduced the numeracy experiment to the class. I directed the children to put a shallow bowl and a deep cup in the bucket in turns. Afterwards, I suggested that they should add dices gradually to the objects until they sink. The children had already encountered the concept of sinking and floating; therefore, the introduction of object piggybacking aided their development in that domain.

Implementation and evaluation: the children exclaimed how the shallow bowl required only two dices to start sinking, while the cup required up to twenty-seven dices. In the process, the children applied the numerical skill of counting, and, as a result, using it to record their observations. However, the activity exposed the varying interests that the kids had with mathematics. For instance, while some of the kids were interested that the deep cup could carry many dies – and kept on counting after every subsequent addition, others lost interest after counting to ten. Consequently, the observation showed how the children's interest in calculations varied according to their skill sets. It also indicated that the increasing complexity of the experiments required the educator to maintain a level of interest, in order to maintain the class' focus on the concept at hand.

Learning outcomes

According to Tao, Oliver, and Venville [CITATION Tao12 \n \t \l 1033], a curriculum should expose children to experimentation from an early age, in order to set a foundation for later scientific learning. Compared to the preceding experiments, my class was interested in the observations and participated fully in analyzing what they observed. Some children displayed more interest levels than others did. Nevertheless, as an educator, it was my duty to keep the discussions as involving as possible. That ensured that the children provided the conclusions from their findings. The learning outcomes required the children to exercise and develop their numeracy, science and literacy skills. At their level, AusVELS outlines the nature of outcomes that the educator should recognize. Subsequently, the class excelled in the science and literacy experiments. However, the numeracy experiment indicated that a better lesson design would increase the involvement levels of the class, and avoid some students' lack of interest when the calculations become lengthy [CITATION Pri93 \l 1033].

Documentation

Garvis, Fluckiger, and Twigg [CITATION Gar12 \n \t \l 1033] argue that for early childhood educators to succeed in implementing curricula, they should display attributes of empathy, care, encouragement and being knowledgeable. On the other hand, Garvis, Lemon, Pendergast, and Yim [CITATION Gar13 \n \t \l 1033] contend that a pre-service should master "domain-specific curriculum content" [CITATION Gar13 \p 28 \n \y \t \l 1033]. Accordingly, this section will demonstrate my evaluation of the practice in question from my perspective and that of the child as a co-contributor to knowledge. It involves the use of techniques like Bloom's Taxonomy and learning assessment tools. The initial documentation will refer to experiences in teaching the children through reading (of fables and tales), role-playing, character evaluation and

story recalls. The subsequent section will examine how children progress in learning. It will analyze how the children expand and develop their knowledge using various assessment approaches; for instance, review of their work samples.

Educator's perspective

My teaching perspective borrows heavily from Bloom's Taxonomy. McDonald and Hershman [CITATION McD10 \n \t \l 1033] observe that the taxonomy is a good "structure for classifying learning principles" [CITATION McD10 \p 172 \n \y \t \l 1033]; and although they refer to the original version that included categories of comprehension, application, synthesis, analysis, knowledge and evaluation – my documentation used the revised version [CITATION Bue09 \l 1033] (see Appendix A: Bloom's Taxonomy).

The teaching experience exposed me to effective teaching methods. For instance, while planning for a class, I factored in two major considerations, (1) identifying the purpose of the lesson in question (that is, asking myself why I would carry out that session that day); and (2) setting out explicit goals and objectives for the lesson (that is, learning outcomes). As a case in point, I used the story of *Goldilocks and the Three Bears* to facilitate the class' literacy skills. Although the tale is common, I had to employ original descriptions, which in turn created a sense of originality that captured the class' attention. Moreover, at the class' level (that is, pre-school), I had to employ simpler language structures to avoid overloading the children with unnecessary references. On the other hand, I had to use concrete illustrations to help the children interpret the tale's abstract content. That included asking the class questions like what items Goldilocks might have used, if she had entered their houses. In another session, the *Three Billy Goats* story allowed me to employ literacy activities like reading, role-playing, story recall and recognition to fulfill various approaches of Bloom's Taxonomy. Nevertheless, the classes were challenging at

times because children have short attention spans when the lesson's content and delivery become monotonous. Class control measures required a delicate balance between loudly calling their attention when they lost interest and started conversing among themselves or softly reminding them of the day's activities. However, patience and involving activities managed to keep their attention in the lessons' content.

Learner's perspective

The simplest manner I could tell the children were developing was through the way they discussed (talked) about a concept. For example, in the 'sink and float' experiment, their discussion enabled me to start understanding how they consumed and evaluated the concepts in question. In other instances; for instance, when the children analyzed the route that Goldilocks used to get to the bears' house, the children displayed their progress in comprehension. Furthermore, I could tell when the teaching became tedious or lost its involving factor. Their turning to noisemaking or conversations among themselves was enough suggestion that the lesson's execution lacked in some factors [CITATION McD10 \l 1033].

On the other hand, the AusVELS curriculum provides indicators that help to assess the learner's milestones. For instance, the communication domain suggests that by the fourth year, the students should be able to sustain periods of attention, without interrupting the teacher. Furthermore, it describes how children should be able to ask questions while seeking clarifications. As a result, I can gauge how well a lesson facilitates learning from the level of the class' participation. On the other hand, the regular meetings between the teachers enabled me to assess how my mentor and other established teachers could attain acceptable levels of class participation, which in turn informed my assessment of my lessons' execution.

Nonetheless, direct observation, that involves note taking and recording allowed me to assess how the children approached the various concepts that I introduced in class. For instance, in a numeracy-related class, I noted the number of students who were able to note the number of dices that made the objects (shallow bowl and deep cup) sink. If a greater percentage did not report the number of requisite dices accurately, it would indicate that sections of the activity were either too hurried or the class did not provide enough discussion to allow for subsequent evaluation (see Table 1: Documenting/assessing children's learning).

On site Assessment	Off Site Assessment
Checklists	Reflective journal or log
Recording – observations and note-taking	Review of work samples; for example, map sketches from the Goldilocks and Three Bears literacy lesson
Reference to curriculum standards; for example, AusVELS domain expectations	Discussion with other teachers and experience sharing
Analysis of child's participation	

Table 1: Documenting/assessing children's learning

Reflection

My teaching experience was fulfilling, although challenging at the same time.

Theoretically, the approach is straightforward. However, on-site application requires the use of various interpersonal, leadership and mentorship skills. On the other hand, it is also the best form of learning [CITATION Cam14 \l 1033]. Facilitating a class' development and learning enables the educator to analyze their effectiveness continually. In addition, it requires close corporation with other educators to recognize the whether one observes the standards set out in the curriculum (in this instance, AusVELS). This reflective section will analyze how the use of Bloom's Taxonomy in one of my class-based experiments (the 'sink and float' activity) facilitated learning in a scientific context. Furthermore, the analysis will consider the

Taxonomy's six phases – that is; (1) remembering, (2) understanding, (3) applying, (4) analyzing, (5) evaluating and (6) creating, to illustrate the learning process that the class achieved. Finally, it will describe the experience that using Google Sites provided for the investigation and how, ultimately, it will contribute to my professional growth.

Bloom's Taxonomy

Phase 1 – remembering: the 'sink and float' experiment required the students to immerse several objects with varying physical attributes. However, the initial immersions involved table tennis balls. The children noted how the balls behaved when they tried forcing them underwater. To remember, I asked the class during after the experiment's conclusion to describe what they observed. A common response was that the balls 'danced around' on the surface of the water.

Phase 2 – understanding: I asked the class what they thought caused the balls to float. According to their interpretation, the balls floated because they were hollow. To challenge their reasoning, I asked them whether if they immersed a rolling pin it would float. They argued that the rolling pin would sink because it is solid, and unlike the balls would not float because of lack of hollow sections. Although, subsequently, the rolling did not sink, the children realized that there this more to sinking than casual consideration of an object's attributes.

Phase 3 – applying: to expand, the discussion on sinking and floating, I asked the class to imagine that they were to build a raft to float on using giant tennis balls or giant rolling pins. The class agreed almost unanimously that a raft made of rolling pins would be safer to ride because it would not 'dance around' the water and spill its passengers. As a result, the children applied the pointers that they had extracted from the experiment.

Phase 4 – analyzing: considering that the class settled on the rolling pin as the best floating object, I asked them to examine the reasons that make it more stable than the tennis

balls. According to their responses, the lack of hollow sections made the pin more stable, because it sat on the water more heavily than the ball. They also argued that when waves struck a 'ball raft', it would not withstand it as easily as a 'rolling pin raft'. As a result, they were able to investigate and list reasons why they would prefer one object to the other.

Phase 5 – evaluating: however, a section of the class did not agree that the rolling pin was the best floater. They cited its tendency to nearly submerged, compared to the balls, which had only a small section under water. Therefore, I encouraged the debate on why one object is better over the other despite the advantages and disadvantages they had outlined. The children opposed to the rolling pin idea displayed an ability to criticize widely accepted notions, which led to the subsequent phase – creating.

Phase 6 – creating: the group of children opposed to a craft made of rolling pins argued that it would be slow, as it would not 'dance around' as fast as one made of tennis balls. By encouraging further debate, the proponents started realizing that the other group had a point. Accordingly, the opponents accepted that their fast creation would be too dangerous to ride. Consequently, I asked the class to envision a raft that was both fast and safe to ride. They came up with a combination of both tennis balls and rolling pins for a raft's design.

My Experience with Google Sites

The teaching practice allowed me to experience the development of nascent minds firsthand. Using technology, on the other hand, encouraged me to examine my experience carefully in order to present it in a manner that was both informative and consumable. At first, it looked daunting because some of my notes were technical and did not suggest any coherence that could create a flowing account. Moreover, the number of sources that dealt with the pertinent topics varied in their arguments and conclusions. For example, casual interpretation of

the Bloom's Taxonomy looked daunting compared to the actual activities that I carried out on-site. However, the subsequent study made me realize that we carried out the experiments in line with the Taxonomy. Otherwise, the use of the site made me apprehensive because I would expose my professional approach to a wider audience. However, the fact that I already discussed my approach with my mentor and other teachers made me confident that the site would be a plus for my career because it will expose my teaching experience to potential employers.

In conclusion, the teacher placement exposed me to the practical challenges that educators face every day. Curriculum implementation is not as easy as it sounds. It requires extra application by both the teacher and the learners. Although it is easy to lose track in the process, continued corporation with more experienced educators, allows a pre-service teacher, like me, to derive fulfillment and consequently work towards effectiveness.

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Appendices

Appendix A: Bloom's Taxonomy

