Editorial

The ‘theme’ of this edition is Inquiry Learning and we have a number of articles that illustrate different perspectives and approaches to inquiry learning in the classroom. We hope they will capture your interest.


‘Keep on Wandering and Wondering: Inquiry – based Learning as Pedagogy’ explodes some myths around the notions of inquiry as classroom practice. This article by Michael Boyle proposes the very notion of inquiry-based learning must itself be subject to critical examination.

Karen Livingstone’s article – ‘The intersection of Inquiry, Values and Civics and Citizenship Education within SOSE’ explores the relationship between inquiry-based approaches to learning and teaching and those values from the Queensland SOSE syllabus aligned with Civics and Citizenship Education. ‘3-2-1 Blast off on a Mission to the Moon’ by Amanda Roach describes a primary classroom project engaging students in developing specific inquiry based skills.

Michelle Koszarycz puts forward a concept that the Religious Education modules being developed by the Religious Education Support Team may be complemented by the application of an inquiry framework especially when planning connected curriculum units.

‘Inquiry Based Learning In Mathematics’, an article from Judy Hartnett, proposes that teaching mathematics through the engagement of inquiry processes represents a radical departure from traditional mathematics instruction. This departure moves toward one which enables students to apply mathematical problem solving skills to arrive at more refined explanations for the world they find themselves in.

The next issue of Curriculum Matters will be based on the topics Assessment, Monitoring and Reporting, with general issues on learning and teaching to follow.

Teachers interested in documenting their experiences in a manner appropriate for an article in Curriculum Matters are invited to submit articles to the editor. We believe the sharing of practice, which highlights aspects of effective pedagogy, should be an important feature of this newsletter/journal. Reference to the enclosed brochure (Writing an Article for Curriculum Matters) may provide assistance for writers, but should initial advice be desired, please contact a member of the RE and Curriculum Team.

Fran Ralston for the editorial committee

Editorial Committee: Karen Livingstone, Michael Boyle, Judy Hartnett and Graeme Barry
Inquiry is a word with a long-standing place of honour in education. Scan most school websites and you will see that it is the favoured way of describing the type of curriculum on offer; seemingly everyone does it and there is little disagreement that it is a good thing.

Visit a religion classroom in the not too distant past and the picture might very well not have reflected inquiry learning. It seems there has always been a characteristic way of ‘doing’ religion in Australian schools and inquiry learning has not been the favoured path. Things have begun to change in recent times and every classroom is different, but until relatively recently many primary school religion classrooms in particular might have gone something like this:

The teacher sat at the front of the classroom on a comfortable chair usually just left of centre and in close proximity to the sacred space. For the uninitiated, the sacred space usually consisted of a small, low coffee table covered in fabric with a variety of religious artifacts in place. These may or may not have included a cross, Bible, plastic (or at the very least) wilting flowers, holy water (deluxe versions coming in a hollow, plastic statue of Mary with removable head) and of course, rosary beads. The entire assembly was usually covered in a thick layer of chalk dust. Students would gather around the feet of the teacher in much the same way as depicted on holy cards of Jesus with the little children. The teacher would proceed to retell a favourite scripture story, most probably from the New Testament Top Five: The Good Samaritan, The Lost Son, The Lost Sheep, Zacchaeus or The Loaves and Fishes. Some discussion usually followed. There was always the obligatory worksheet to be glued, nicely of course, into the religion scrap book. And so that was religion for the day and the real learning moved on from there.

Parody maybe, and not universally the case, but the message is similar to that noted by Eisner (1994); Longstreet and Shane (1993) and others – much that passes for education is not education at all but ritual. Put simply if not somewhat brutally, what kids more often learn is not the stuff but the way the stuff is delivered. Consequently, religion is often seen to be a soft option subject with little room for inquiry, and therefore little perceived relevance in the lives of contemporary students. Put another way, it is the hidden curriculum that often does the real teaching because the very nature and organisational design of the religion classroom is so frequently focused on a patterned, repetitive mode of delivery.

The exemplary religious educator, Thomas Groome (1991), in reference to the learner and the curriculum says that what is needed is:

To honour and engage participants as agents-subjects-in-relationship rather than as dependent-objects-in-isolation, that the curriculum (environment, process, and content) be humanizing for them for “fullness of life” (John 10:10), that it be free of manipulation, domination, and indoctrination. Our pedagogy is to actively engage people’s whole “being” in place and time – their physical, mental and volitional capacities, their head, heart, and action, their intellect, desire, and will, their reason, memory, and imagination, and enable them to reclaim their past, embrace their present, and take responsibility for their own and other’s future. (p.430)

Maria Harris (1989), another outstanding religious educator, speaks of a religious education curriculum that involves learning in connection with others and through others; learning that demands active engagement and inquiry; learning that is fluid, flexible and real.

Let’s be clearer about what we mean by inquiry learning within the context of religious education. Inquiry learning refers to the active processes in which students are engaged as they pursue increased understanding of religion and religious matters. In short, inquiry implies involvement that leads to understanding. These active processes may include communicating questions, intuitions, conjectures, reasons, explanations, judgments and ideas in a variety of forms. They will also include the development of skills and dispositions to think and act in ways that are, as Groome put it, humanising for life in all its fullness. For Catholic schools within Brisbane Catholic
Education, religious understanding is inextricably linked to the concept of religious literacy defined as,

*The flexible and sustainable mastery of a repertoire of practices related to the discourse of religion, using spoken, written and multimedia texts of traditional and new communications technologies.* (adapted from *Literate Futures: Report of Literacy Review for Queensland Schools* in p. 2 of *Religious Education Years 1 to 10 Learning Outcomes, 2003*)

Clearly, learners’ conceptions about religion and religious matters are embedded in their culture and tied to their use of language.

Certainly the writers of the new religious education modules have tried to present a clear conceptual framework for implementing inquiry processes in both the primary and secondary religion classrooms. The new modules are unambiguous in their design, being pedagogically focused rather than content driven. The Roles for Lifelong Learners (transformational outcomes) become the starting place for all planning, teaching and learning. The religious education core learning outcomes (transitional outcomes) are fed through a variety of discrete and connected learning tasks that support student inquiry. As in other key learning areas, teachers are encouraged to continually ask, “Why is this important for these students at this time?”

We can try and teach as much content as we like and we will never be able to teach it all. The research on religious education learning indicates that students need to learn strategies for thinking deeply about religious matters. They should be able to describe problems and issues in detail before pronouncing a judgement or attempting a solution. They need to determine what relevant information should enter the analysis of a problem or issue, and decide which procedures can be used to generate descriptions and analyses of the problem or issue. Through a range of inquiry strategies the new modules support students in the religion classroom in gaining new and deeper understandings, to change, adapt or modify their ideas and to clarify their beliefs about God, Church and life.

Students build new knowledge and understanding on what they already know and believe.

Students have their own personal conceptions about religious matters and those conceptions influence their learning. Of course not all of their ideas and beliefs are consistent with ideas accepted by the Church. And yet denying the existence and powerful effects of this “prior” or “informal” knowledge is educationally unsound since it forms a strong base on which students might be encouraged to question preconceived notions and build deeper understandings. Students often hold tenaciously to these ideas, and their preconceptions can be resistant to change, particularly if they are subject to teaching methods that lack a strong focus on inquiry. Inquiry strategies that require students to consider alternative perspectives, move beyond surface level analyses and generate innovative ideas all assist in the developing of religious literacy.

Learning is mediated by the social environment in which learners interact with others.

It is a simple truth – if we want students to develop the Roles for Lifelong Learners such as Community Contributor or Active Investigator they are not going to do it with a piece of paper and a pencil, working by themselves. Research indicates that learners benefit from opportunities to articulate their ideas to others, challenge one another’s ideas, and, in doing so, reconstruct their own ideas. Students develop in understanding as they construct questions regarding moral issues, community values as well as Church beliefs and teachings. The new modules strongly advocate for the use of learning teams through which students are led to investigate, propose multiple pathways to problems and issues and embark on interdisciplinary projects through which they can

![Diagram](Triangle of Abstraction diagram, Curriculum Matters, Volume 2 Number 2, 2003, p. 10)
demonstrate their achievement of both transformational and transitional outcomes.

Of course the effects of the physical learning environment cannot be underestimated. As Eisner wrote way back in 1979,

*Consider for a moment school architecture and the design of school furniture. Most school rooms are designed as cubicles along corridors and have a kind of antiseptic quality to them. They tend to be repetitive and monotonous in the same way that some hospitals and factories are. They speak of efficiency more than they do of comfort...Schools are educational churches, and our gods, judging from the altars we build, are economy and efficiency. Hardly a nod is given to the spirit.*

**Reflection**

Utilising a range of inquiry strategies, the new religious education modules encourage students to understand and critically assess ideas, values, beliefs and teachings about and beyond the Catholic Christian tradition. They serve to supplement and support the great work currently being undertaken by religious educators in our primary and secondary schools and colleges across the archdiocese of Brisbane and beyond. In short, the modules attempt to invite students into a meaningful and positive encounter with the Scriptures, tradition and contemporary life of the Church.


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**Religious Literacy and Inquiry**

Michelle Koszarycz
Education Officer Religious Education

**Why Should Religious Literacy Be Facilitated Through Inquiry?**

An inquiry-learning framework, it can be argued, provides a very effective mode of enabling religious literacy and is one that has its foundation in solid and contemporary educational theory.

**Foundations**

Thomas Groome (1980) in the latter decades of last century, was one of the first to found his praxis approach on the theories of a contemporary critical philosopher, Habermas, along with others such as Freire and Dewey and developmentalists such as Piaget and Kohlberg. Groome’s research ultimately resulted in yet another ‘enfaithing’ (Lovat 2002) or catechetical model of educating in the Catholic religion, albeit one that was grounded in sound contemporary pedagogical theory which fostered inquiry and some critical reflection.

Lovat (1989, 2002) examined the theories studied by Groome and the resultant framework, but considered Groome did not take inquiry far enough in enabling students to critique in an open-ended manner. He devised the *Critical Model* which, unlike Groome’s model, enabled students to learn ‘about’ religion while not necessarily learning ‘how to be religious in a particular way’ or according to a single religious tradition or discourse.

Inquiry models such as *TELSTAR, Action Research or Social Investigation* are likewise useful in developing religious literacy according to the aim for religious education in the Catholic school classroom in the Archdiocese of Brisbane.

This aim is, “to develop students’ religious literacy in the light of the Catholic tradition, so that they may participate critically and effectively in the life of their faith communities and wider society” (A Syllabus for Religious Education for Catholic Schools 1997, p.18).

Inquiry methodologies, through a process of collaborative dialogue, encourage the development of deep interpretive skills and skills of critical reflection and action. All four literacy resources found in *A Model for Developing Religious Literacy*, in the publication *Religious Education*
Beliefs, Celebration and Prayer

Teachers are however able to base their planning from the modules on a range of inquiry learning models and methodologies as an effective means of supporting students as they develop religious literacy. For example, it is possible to create a unit from a RE module by utilising an inquiry framework/model such as Social Investigation or TELSTAR.

Using a SOSE module such as Walk in My Shoes: Cultural Study, may be a useful starting place when planning an inquiry based unit. Similarly, the RE module, People of Justice could become a unit based on an inquiry methodology entitled: Who are People of Justice?

Another module, Church: Unity and Diversity may be the basis for creating a unit of work which utilises inquiry and investigative strategies - How does the Church manifest both unity and diversity? The changes in the titles suggest such units will engage students in the use of strategies from an inquiry approach to learning, thus developing and building on these skills whilst working toward the outcomes and the inherent aim in the religious education module.

Inquiry frameworks and associated methodologies not only complement the modules effectively and simply, but also are especially useful when planning connected units. They provide many opportunities for students to develop each of the roles for lifelong learning, particularly those of Active Investigator, Community Contributor and Leader and Collaborator. Inquiry learning methodologies are therefore most effectively used in and compatible with the framework of outcomes in Religious Education.

References


How can we best support students in developing higher order thinking? One of the most effective ways is to consider the types of questions we ask students both in written and oral form. If we want our students to make sense of their world, be active in their learning, be reflective, use and make meaning from 'hands-on' experiences, inquire and investigate, and take time to ponder, wonder, explore and evaluate ideas, then we need to provide students with learning activities that create opportunities to think at higher levels.

What are the different levels of thinking and questioning and what is 'higher order thinking'? Most of the research in this area is based on the work of Benjamin Bloom (1956) and his taxonomy of cognitive behaviours. Bloom's Taxonomy outlines a hierarchy of six levels of thinking that ascend from knowledge, comprehension, application, analysis and synthesis, to evaluation. Each level relates to a higher level of cognitive ability with learners being able to recall facts and information through levels of making predictions, explaining why or how, making connections and comparisons, through to giving and justifying opinions, and making inferences and judgements. To become skilled in the art of effective questioning, teachers can look to Bloom's taxonomy to gauge their proficiency and target areas for growth as questioners (Shaunessy 2000).

Kindsvatter, Wlien and Ishler (1992) suggest four levels of questioning:

Convergent Questions seek to ascertain basic knowledge and understanding.

**Level 1 – Low Order Convergent**
Questions require students to engage in reproducing information. Emphasis is upon memorisation and recitation.

Examples: answer 'yes' or 'no', list, identify, name, recall, quote.
(Bloom's Knowledge level)

**Level 2 – High Order Convergent**
Questions require students to do productive thinking. Students understand and mentally organise information.

Examples: explain, compare, summarise, translate, describe.
(Bloom's Comprehension and Application levels)

Divergent Questions require students to process information creatively.

**Level 3 – Low Order Divergent**
Questions require students to supply a reason, cause, citing evidence to support their answers.

Examples: give evidence, provide reason/s for, infer, draw conclusions, analyse causes. (Bloom’s Analysis level)

**Level 4 – High Order Divergent**
Questions require students to respond creatively and originally to problems or scenarios.

Examples: speculate, give an opinion, pose solutions, value, judge and generate possibilities. (Bloom’s Synthesis and Evaluation levels)

Alan Maley (2003, p.1) states that 'good teachers know how to ask the right questions at the right time so as to gradually extend their learners' ability. They know how to challenge their learners to think, while showing through their manner of questioning that they value the answers their students give.'

Teachers use a wide range of skills and abilities to create learning environments where all students feel comfortable and are sure that they can succeed both academically and personally. The Productive Pedagogies model (University of Queensland & Education Queensland, 2001–2003) outlines four dimensions for effective learning and teaching - Intellectual Quality, Connectedness, Supportive Classroom Environment, and Engagement with Difference. Higher order thinking, in the above document, is described as requiring 'students to manipulate information and ideas in ways that transforms their meaning and implications. This transformation occurs when students combine facts and ideas in order to synthesize, generalise, explain, hypothesise or arrive at some conclusion or interpretation.'

As a classroom teacher how can I foster higher-order thinking in my classroom?

1. Create a supportive classroom environment that is conducive to high-level thinking.
   - Use a range of multi-level materials
A Checklist for Effective Questioning

- I ask my students higher order thinking questions every day.
- I encourage discussion in my classroom by using open-ended questions.
- I decide on the purposes of my questions and plan accordingly.
- I avoid 'yes' and 'no' questions.
- I use 'probing' questions to encourage students to elaborate and support assertions and claims.
- I ensure that students fully understand my questions.
- I encourage students to ask each other higher order thinking questions.
- I give my students sufficient 'wait time' when answering questions.
- My teaching outcomes, learning experiences and assessment tasks are connected to high level behavioural verbs.
- I am happy for my colleagues to observe my questioning techniques to help improve my effectiveness.

Follow-up ideas: Analyse the types of questions you ask students – what inferences can you make? Evaluate the effectiveness and appropriateness of your planning in relation to higher order thinking and questioning – collect data and draw conclusions.

References
Faculty Innovation Center 2001, The Quest for Higher-Order Thinking Skills.
Education Dept http://www.lgc.peachnet.edu/academic/eduatn/Blooms/critical_thinking.htm
In The Wise Woman and Her Secret, Eve Merriam (1991) tells the tale of a woman who will not reveal the secret of her wisdom. Finally, a young girl discovers it, yet she is amazed, “How can I have found it?” Because, the old woman replies, “The secret of wisdom is to be curious – to take the time to look closely, to use all of your senses to see and touch and taste and smell and hear. To keep on wandering and wondering”. Merriam encourages us to explore our worlds through multiple senses, a message echoed by educational theorists. Dewey (1938) contends that children need to interact with the world and see the relationship between their concrete experiences and abstract thought. Curriculum needs to be purposeful in children’s lives, starting from children’s own experiences through which they find relationships among realities in the world around them, past and present. Short and Harste, with Burke (1996) argue that an inquiry-based curriculum is built from the learners’ interests and must be personally and socially significant to spur lifelong curiosity – lifelong wandering and wondering.

When viewed from a curricular perspective, inquiry-based learning is often seen as a process that provides opportunities for learners to engage in the practices of life beyond the classroom – using the tools and methods of scientists, artists, historians, problem solvers, or citizens in society – to gain a deeper understanding of themselves and the world around them. This process is situated, personal, action-based, social, and reflective. It is also a critical process, one that questions received knowledge and social structures, and even its own processes. Thus, it invites a continual questioning of what it means to teach and learn, what counts as knowledge, and what meaning or action follows from learning. The very notion of inquiry-based learning must itself be subject to this critical examination.

Most versions of inquiry learning see a continuing cycle or spiral of inquiry (Bruner, 1965) as the basis for the framework. There is usually a strong caution against interpreting steps in the cycle as all being necessary or in a rigid order. In fact, inquiry learning is less well characterised by a series of steps for learning than it is by situated learning (Lave & Wenger, 1991). This is a phrase describing how learning happens as a function of the activity, context and culture in which it occurs, rather than through abstract and decontextualized presentations. People thus learn through their participation in a community of practice. Learning is a process of moving from the periphery of a community to its centre, that is, going from legitimate peripheral participation to full enculturatation. Most of this process is incidental rather than deliberate.

Misconceptions about Inquiry

While embraced by some advocates, inquiry as a classroom practice has also been received critically. Such criticism is healthy since it invites dialogue that may eventually lead to new curricular potentials in inquiry learning. These criticisms originate when inquiry as chosen practice is implemented or perceived without being based in crucial theoretical beliefs. This section is an attempt to strengthen the connection between theory and practice in the inquiry discussion by considering some of the myths surrounding inquiry-based learning.

Myth 1: Inquiry is too complex for young learners.

Research indicates that children as young as infants and toddlers actively inquire throughout their daily lives and are able to understand thought, even prior to school (Weaver, 1990; Edwards, Gandini & Forman, 1998; Harste, Woodward & Burke, 1984). Reggio Emilia’s early childhood program in Italy documented the countless ways in which young children explore their worlds through “a hundred languages, a hundred thoughts, a hundred ways of thinking, of playing, of speaking” (Edwards, Gandini & Forman, 1998, p3). Learning is not based on age or biological stage, but on the child’s experience with and exposure to language, literacy, art and other sign systems (Harste, Woodward & Burke, 1984).

Whilst young children may not be able to read and record information, they can turn to others for assistance in performing these tasks. They can also utilise other sign systems such as art, music or drama as vehicles for making and sharing meaning. Thus, although young children may need assistance in performing the communicative tasks to articulate their thought processes, they can wonder and explore.

Myth 2: Inquiry is just a fancy name for doing research.

Traditionally, research consists of assigning students a topic and instructing them to find out about it through research materials found in the library or resource centre. This traditional view of student research defines inquiry as
questioning and searching for "answers". Inquiries should involve a series of experiences that extend beyond the simple search for answers in a textbook or encyclopedia, making the traditional view of student research a subset of, rather than another name for, inquiry.

A goal of inquiry classrooms, then, is to help learners move beyond perceiving inquiry as looking up information in textbooks, encyclopedias and the internet, and to adopt a philosophical stance of viewing learning. From this philosophical perspective, learners explore their world through an inquiry lens, making changes and adjustments in their thinking, experimenting with tools in their environment, inventing new tools, and venturing further in their wandering and wondering.

Myth 3: In an inquiry classroom where learners are responsible for gathering resources and information, the teacher does not need to teach.

Teaching in an inquiry classroom means that the educator takes on a broader role than simply disseminating knowledge. The inquiry classroom is informed by theories in semiotics (Peirce, 1960; Eco, 1976), which assists us to understand that meaning is constructed as it is filtered through past experiences of negotiated among individuals based on their experiences and the pragmatics of a given situation (Rosenblatt, 1978). Thus, the teacher using an inquiry approach works to establish and organise a climate for inquiry so that students develop the tools to explore their curiosities and become more thoughtful, reflective, and inquisitive.

However, it must also be said that there is a place for direct instruction within an inquiry framework but that this should not become the dominant mode for the unit of work under investigation.

Myth 4: An inquiry curriculum is impossible to implement because teachers have so many other subjects to teach.

An inquiry curriculum is not intended to be another “teaching idea” added onto the existing curriculum. It is a philosophical framework that guides instruction. Researchers argue that in order for children to become readers and writers, they need to inquire as readers and writers (Burke, 1988; Avery, 1993). Similarly, in order to become mathematicians, historians, scientists, artists and musicians, students need to inquire from and through those perspectives. Rather than adding to the curriculum, an inquiry perspective is woven through the curriculum.

Myth 5: True inquiry occurs only when students generate and pursue their own questions.

For students to develop the ability to ask questions and ask questions which really matter, they must “practice” asking questions. However, if the desired outcome is learning discipline subject matter, the source of the question is less important than the nature of the question itself. It is important to note, however, that in today’s classrooms, students rarely have opportunities to ask and pursue their own questions. Students will need some of these opportunities to develop advanced inquiry abilities and to understand how knowledge is pursued and constructed.

Myth 6: All subject matter should be taught through inquiry.

Effective teaching requires a variety of approaches and strategies. It is not possible in practice to teach all discipline subject matter through inquiry, nor is it desirable to do so. Teaching using only one method would be ineffective, and it would probably become boring for students.

Myth 7: Inquiry teaching occurs easily through use of hands-on or kit-based instructional materials.

Using hands-on or kit-based instructional materials can increase the probability that students’ thinking will be focused on the right things and learning will occur in the right sequence. However, the use of even the best materials does not guarantee that students are engaged in rich inquiry, nor that they are learning as intended. A skilled teacher remains the key to effective instruction. He or she must pay careful attention to whether and how the materials incorporate the five essential features of inquiry – engaging in questions, giving priority to evidence in responding to questions, formulating explanations from evidence, connecting explanations to scientific knowledge, and communicating and justifying explanations. Using these five features to review materials as well as to assess classroom practice should enhance the variety and depth of learning.

Myth 8: Student engagement in hands-on activities guarantees that inquiry teaching and learning are occurring.

Although participation by students in activities is desirable, engagement in hands-on activities is not sufficient to guarantee their mental engagement in any of the essential features of inquiry.

Myth 9: Inquiry can be taught without attention to subject matter.

Some of the rhetoric of the 1960s was used to promote the idea that learning processes should be the only meaningful outcome of education. Today, there are educators who still maintain that if students learn the processes of a discipline, they can learn any content they need by applying these processes. However, student understanding of inquiry does not, and cannot, develop in isolation from subject matter. Rather, students start from
what they know and inquire into things they do not know. If, in some instances, a teacher’s desired fundamental outcome is that students learn to conduct an inquiry, then subject matter serves as a means to that end. Specific subject knowledge remains important but the abilities and understandings extend beyond the processes of the discipline to engage students in a full complement of thinking and learning.

**Merging Theory and practice**

In the twenty first century, the ability to engage in careful, reflective thinking and inquiry has been viewed in various ways: as a fundamental characteristic of an educated person, as a requirement for responsible citizenship in a democratic society, and, more recently, as an employability skill for an increasingly wide range of jobs.

Deborah Gough (1991, p.2) typifies the current viewpoint in education concerning the importance of teaching today’s students to think critically and creatively:

> Perhaps most importantly in today’s information age, thinking skills are viewed as crucial for educated persons to cope with a rapidly changing world. Many educators believe that specific knowledge will not be as important to tomorrow’s workers and citizens as the ability to learn and make sense of new information.

Virtually all writers on this subject discuss thinking skills in connection with the two related phenomena of modern technology and fast-paced change. Robinson (1987, p.16), for example, states that:

> Teaching children to become effective thinkers is increasingly recognized as an immediate goal of education....If students are to function successfully in a highly technical society, then they must be equipped with lifelong learning and thinking skills necessary to acquire and process information in an ever-changing world.

Beyth-Marom, Novik and Sloan (1987, p.216) underscore this point, characterising thinking skills as means to making good choices: “Thinking skills are necessary tools in a society characterised by rapid change, many alternatives of actions, and numerous individual and collective choices and decisions”. Consequently, engaging students in critical inquiry can only enhance their possibilities for life beyond the classroom.

Teachers set the tone for inquiry by:

- being inquirers;
- possessing a theoretical understanding of inquiry in relation to curriculum and the learner;
- encouraging students to view their worlds as questions;
- organising the curriculum to allow in-depth individual inquiries;
- observing students’ inquiries, posing questions to stimulate further inquiry and reflection, learning with students through their inquiries;
- encouraging diversity of thought through multiple ways of knowing; and
- organising an environment in which students are equally accountable for their learning.

When teachers are grounded in inquiry theory and translate the theory into practice, learners will:

- view their worlds as a question;
- generate questions locally situated within their socio-cultural contexts;
- choose personally meaningful inquiries; and
- regard learning as a lifelong endeavour.

**References**


This article seeks to explore the relationship between inquiry based approaches to learning and teaching and the values from the Queensland SOSE syllabus, particularly in the context of Civics and Citizenship Education. It will explore what we mean by Civics and Citizenship Education (CCE), the roles that values have to play in CCE and how an inquiry based approach can be used to enhance student learning in this area.

**Defining Civics and Citizenship Education**

Civics and Citizenship Education of old conjures up images of the transmission model of teaching where students get bombarded with a whole range of facts and information associated with systems of government and voting, that they then regurgitate in paper and pencil tests. Not surprisingly, many people found it dry and boring. Fortunately, modern conceptions of CCE, supported by curriculum documents such as the SOSE syllabus and resources like Discovering Democracy, Citizen 2030 and the Studies series, have pushed these boundaries to include a much richer and varied scope of investigation.

Beyond the legislative definition of citizenship (that is, people who have the legal status of 'citizen' under the *Australian Citizenship Act 1948*), there exists the definition of citizenship that is about being an active person within a community shaped by various political, social, cultural and environmental influences.

Citizenship within Australia has evolved within a multicultural context, and the way we participate as members of various communities, including our school and class community, must necessarily accept, respect and reflect this. We also operate within a democratic society which brings with it various rights (eg freedom of speech and freedom of religion), obligations and responsibilities. Teachers might like to consider what expectations they and others have of 'citizenship' within their class, and how democratic their classroom is.

**Values in Education**

The values in education debate is alive and well in the current political climate, with ideas being debated about 'political correctness' and 'values free' curriculum within the context of public and private education. Certainly within Queensland the SOSE syllabus explicitly identifies four key values that are crucial for students to engage with, and which are embedded within each of the core learning outcomes. The upfront identification of values within this syllabus certainly makes it unique amongst national and state curriculum documents.

Of these four key values – Democratic Process, Social Justice, Ecological and Economic Sustainability, and Peace, it could be argued that the value most closely aligned with CCE is Democratic Process. However upon deeper analysis, it becomes apparent that all values have a role to play in being an active citizen. For example, citizens lobbying various groups in relation to refugee issues usually come from a platform of social justice. Those concerned about environmental issues within, for example, their school or local community, will more than likely have strong values associated with ecological sustainability. Teachers have only to choose a core learning outcome and apply a values lens to see that more than one value is plausible.

Gilbert and Hoepper (in Gilbert, 1996) warn against simply accepting values and their definitions, or assuming they are all equal. The four SOSE values as defined in the Queensland Years 1–10 SOSE Syllabus and Sourcebook Guidelines (2000) can be interpreted differently depending on their context. They overlap in definition and application, sometimes they conflict with each other, and they reflect understandings at a particular point in time. This provides a challenge for teachers within the SOSE classroom when dealing with concepts and content that may reflect particular values perspectives. For example, there are different types of democracies that operate across the world. These are situated within particular social, cultural and historical contexts and all must be considered when examining what it means to be a citizen within a democracy. Also, for one to exercise their democratic right, such as freedom of speech, they must also be sure not to marginalise other groups with their views, such as has occurred in the past with racism and sexism for example.

**The Intersection of Inquiry, Values and Civics and Citizenship Education within SOSE**

Karen Livingstone
Education Officer: SOSE
Inquiry based learning

Inquiry based approaches to learning and teaching are embedded in constructivist ideas of connecting students' existing knowledge with new knowledge. In this way, teaching and learning is a two-way process, which requires students taking more responsibility for their learning, and of course teachers handing over some of this responsibility! This provides opportunities for students to learn from each other, to negotiate learning opportunities and to frame their own questions for investigation. It also begins to equip students with the knowledge, skills and dispositions associated with Brisbane Catholic Education's roles for lifelong learners.

Many (e.g. Hamston and Murdoch, 1996) argue that inquiry based learning is fundamental to social education. This is reinforced in the SOSE syllabus (Queensland Studies Authority, 2000), which highlights five processes of social and environmental inquiry described as the "essence of Studies of Society and Environment" (p. 3).

The five processes of SOSE are investigating, creating, participating, communicating and reflecting. They should be used when planning teaching and learning experiences and can operate as a model of inquiry themselves.

According to Gordon (2000) features of inquiry models include:

- Framing and focusing questions (Teachers and students asking different types of questions that are of interest to students and encourage the development of deeper understandings)
- Locating, organising and analysing evidence
- Evaluating, synthesising and reporting conclusions
- Taking action of some sort (This might be through taking direct action on an issue, encouraging others to take action or become involved, informing others or assisting change to take place eg through fundraising)
- Reconsidering consequences and outcomes of each of the above phases.

Other models of inquiry useful within SOSE are Social Investigation Strategy, Action Research, TELSTAR, Integrating Socially, Geographical Inquiry, Historical Process and Information Literacy. These models need to be used flexibly rather than the linear way in which they are presented, and teachers need to recognise the recursive nature of inquiry (Nayler 2000). For further information on each of these models refer to: http://education.qld.gov.au/tal/curriculum_exchange/teachers/sose

The intersection of values, inquiry and Civics and Citizenship Education

Gilbert (1996) puts forward the idea of SOSE for effective participation in society (Civic Literacy). He argues goes beyond the passivity of just knowing your role as citizens and what you are expected to do, but to have the ability to apply your knowledge and to take part in decision making opportunities. These processes are of course essential to effective inquiry, and it could be argued that they should reflect the value of democratic process. Gilbert goes further pointing out that social and critical understandings are necessary in order to participate in such a way that it is understood that the processes of decision making are not "equally open and fair to everyone" (p. 14). This challenges us in CCE to question who has access to information and power, which groups are marginalised and why this might be so, but importantly, what we can do about it.

It is apparent then that inquiry based learning as a pedagogical tool is crucial to effectively engage with SOSE concepts and content, and these concepts and content cannot be divorced from an exploration, analysis and critique of implicit and explicit values. Civics and citizenship education, largely but not exclusively found within the Systems, Resources and Power strand of the SOSE syllabus, identifies many of these concepts and content.

References

In role as astronauts on a mission to the moon, students were asked the question: “If you could only take 7 things with you to the moon, what 7 things would you need?” Posing this question tapped into the student’s natural curiosity and moreover fostered inquiry based learning in my classroom.

This inquiry required the student to:

- research the conditions on the moon and investigate the obvious and less obvious features of the moon
- identify factors that are possible causes of problems for the mission to the moon
- use electronic data research skills as well as books in their search for information
- convey complex information to other people to describe the situation on the moon and to make recommendations
- arrive at a resolution to the problem by brainstorming with other people, and
- reflect on their learning practices.

Specific thinking skills were developed such as comparing, contrasting, inferring, sequencing, predicting, hypothesizing and drawing conclusions. Students need to know these strategic thinking skills in order to apply them throughout life in problem solving situations. For modern education the skill and ability to continue learning is the most important outcome.

My role as teacher during these educational experiences is one of facilitating the learning process. There is a structure and definite focus to inquiry learning, and the teacher and their facilitation plan must ensure that it is in place. My facilitation plan provided general direction (while providing for individual creativity, decision making and responsibility) and allowed both the individual students and the whole class to achieve the set goals.

Student assessment is an ongoing part of the facilitation of this learning process. Forms of assessment used during this activity included a portfolio of the student’s work showing that they had become better inquirers and problem solvers. Other assessment strategies included a presentation, interviews, observations and checklists. The students were also engaging in self-assessment. I like to collect many examples of student’s work over time so that we have evidence of improvement with problem solving.

Inquiry learning can be applied to all subjects, not just Science and Studies of Society and Environment. Whenever we do a character analysis or a plot analysis in reading, this would be an example of applying an inquiry approach to learning. When students are reading or learning a poem, they can generate their own hypotheses for the meaning, the symbolism, the metaphor and the application of that knowledge to life. In any lesson, I have an application which provides an opportunity for the students to transfer, to apply and to solve problems using the knowledge they have acquired.

As teachers and educators we must prepare our students to cope with changes that will increase with complexity throughout their lives. From past experience we know that many of the changes to occur in the future cannot always be foreseen in the present time. Inquiry-based learning means that students are involved, that students reflect, that students ask questions, that students identify and surface problems and that they form their own theories and knowledge. Students participating in inquiry-based learning look forward to learning and demonstrate more confidence and desire to learn more. The skills they learn will enable them to continue the quest for knowledge throughout life.
In both these documents a set of principles and standards argued that a focus on problem solving should be the central focus of a healthy mathematics curriculum. Lovitt (1999) asked “If you came down from Mars into 100 maths classrooms at random [today], you would be struggling to find compelling evidence of this central focus.” Observation of classrooms around Queensland would support this statement.

Whilst problem solving has certainly added vitality to many classrooms, it has not become the central theme intended. Lovitt (1999) saw two major reasons for this:

1. Lack of clear and widely accepted criteria as to what constitutes problem solving. The meaning of problem solving has become very blurred, all encompassing and in some cases contradictory.

2. The unfortunate perception that one aspect of problem solving is delivered through games and puzzles relegates it to the periphery of mathematics education. “I do some really interesting problem solving on Friday afternoons…” Teachers probably don’t realise the inherent message in this statement – that problem solving is not important, and merely a bit of fun to be done after the ‘real stuff’.

Lovitt (1999) found step 1 interesting for schools in that it reinforces Holton’s position that without an interesting problem there is no real reason to continue the steps. It is in steps 4 and 5 that Lovitt sees his two dimensions of school mathematics (thinking and reasoning, and skill development) come together as contributors to the investigative process.

Holton (1994) wrote an article titled ‘What Mathematicians do – and why they do it’. He listed the process by which mathematicians create knowledge and solve problems. Lovitt (1999) paraphrased these stages as:

1. Find an interesting (meaningful/ worthwhile) problem
2. Informally explore, unstructured ‘play’ which generates data
3. Form patterns in the data, create hypotheses, conjectures or theories
4. Invoke problem solving strategies to prove or disprove any theories
5. Apply any basic skills known as part of the proof process
6. Extend and generalise the problem – what else can I learn from it?
7. Publish (or perish)
8. Go back to Step 1.

Interestingly these steps do not reflect the majority of lessons occurring in classrooms under the banner of problem solving. Problem solving strategies like ‘break the problem into manageable parts’, ‘guess and check’ or ‘work backwards’, have been the focus of lessons. However, without the first three steps above, these activities remain fairly purposeless except for the development of a bank of problem solving skills which risk never being utilised in the context of a ‘real’ problem.

An interesting parallel to the steps for the process of mathematicians is found in the stages of an inquiry approach. One such inquiry method used for the organisation of learning activities has become known as the TELSTAR process (Tune in, Explore, Look, Sort, Test, Act and Reflect). This closely resembles the steps of the mathematician, and has most often been related to the teaching of other Key Learning Areas – particularly Studies of Society and Environment.

Teaching mathematics through inquiry represents a radical departure from traditional mathematics instruction. Most maths lessons follow a predictable sequence of the teacher presenting new material, class practice exercises, and assignment of similar exercises for homework. This approach is commonly referred to as the transmission model. As discussed above, other approaches such as problem solving have been incorporated into maths programs but there is a question to the frequency of their usage as a way of learning mathematics.

The kind of mathematical skills and knowledge that have traditionally been the goals of direct teaching (some basic factual knowledge and computational skills) are no longer what our society requires, given its rapid changes and the availability of more sophisticated technology.
Rather, to fully function in today’s world, students should become good mathematical problem solvers and critical thinkers, confident in their mathematical ability and able to apply what they know in novel situations. Borasi (2004) rejected the idea that knowledge is stable and certain, instead proposing that knowledge is a process of inquiry motivated by uncertainty and open to doubt. The doubt promotes inquiry as the effort to achieve more and more refined explanations of the world around us.

Several psychological studies on how individuals learn have provided a critique of the transmission model. They challenge some of the behaviourist assumptions about learning on which such a paradigm relies, much of which is based on Piaget’s (1970) model of cognitive development where children construct concepts through interactions with their environment. These studies (e.g. Baroody & Ginsburg, 1990; Von Glaserfeld 1991) suggest that in order to learn mathematics effectively, students need to make sense and construct a personal understanding of concepts. They cannot simply “absorb” them from teachers’ explanations or even demonstrations.

Borasi articulated the theoretical assumptions informing an inquiry approach to mathematics instruction as:

- A view of mathematics as a humanistic discipline; that is, the belief that mathematical knowledge is socially constructed rather than deterministic, and is shaped by cultural and personal values like other products of human activity
- A view of knowledge more generally as constructed through a process of inquiry where uncertainty, conflict and doubt provide the motivation for the continuous search for a more and more refined understanding of the world
- A view of learning as a generative process of meaning making, requiring both social interaction and personal construction, and informed by context and purposes
- A view of teaching as stimulating and supporting the students’ own inquiry and establishing a learning environment conducive to such inquiry.

Taken together, these assumptions offer an alternative theoretical framework for mathematics instruction.

To put an inquiry approach into practice one needs to find questions, or as Lovitt (1999) would suggest, problems that are interesting, meaningful and worthwhile and place these in the classroom for investigation. Teachers of mathematics need to develop or find questions related to the desired outcomes of syllabus documents and propose these to the students. A simple way I have been using to gauge the depth of questions for investigation is whether or not the question immediately raises further questions that require consideration before the problem can be started. These questions often relate to the step 2 of the mathematician process mentioned by Holton (1994) or the Explore, Look and Sort stages of the TELSTAR process. Below is an attempt to develop some questions a mathematics class could investigate as well as ones I have observed in classrooms:

- If we were to turn the grassed area outside the Year 5 classroom into a car park – how many cars could we fit in?
- Does the size of your foot have anything to do with how fast you can run? (acknowledgement to St Francis College Crestmead)
- How much water do you waste if you leave the tap running while cleaning your teeth?
- How much water can you hold in your school hat? (acknowledgement to Christ the King School Graceville – as cited in the Courier Mail Sat 21 Feb 2004)
- What day of the year is best for holding a school fete?
- Plus many many more ....

All of these investigations will see opportunities for teachers to capture the students demonstrating outcomes from the new Queensland mathematics syllabus – assuming these are considered in the planning of the learning experiences associated with the investigation.

A carefully designed inquiry presents students with challenging thinking situations, concrete data to manipulate, and many opportunities for collaborative discussion of the problem situation.

An answer is so much more meaningful when one already has a question.

http://www.rochester.edu radiate/

References: