Garden to Table in the New Zealand Setting: Explanations, Perceptions and Delivery

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Abstract

An authentic real-world context can provide the opportunity for meaningful integration of subject disciplines. However finding such a context is not always easy. Although not generally seen as an avenue for technology education, a school garden can provide an opportunity for rich diverse integrated learning. This paper outlines a unique programme which encourages children to develop a school garden to grow fruit and vegetables for cooking and sharing. Since its introduction in 2008 the Garden to Table programme has grown in popularity with over 33 participating primary schools throughout New Zealand. Schools are able to adapt and deliver the programme to suit their school's particular needs.

This paper will provide a background to: school gardens, the development of Garden to Table the importance of authentic learning in technology education, and detail upcoming research into teachers' perceptions about the programme and how it is delivered.

Key words: *school gardens, cooking, growing, harvesting, Garden to Table, technology education*

Introduction

The value of school gardens has been well recognised for over a century. In 1840 Fredrick Froebel established the first kindergarten to teach children through gardening (Froebel, 1891; Herrington, 2001; McLennan, 2010). This kindergarten had three essential parts; creative play, singing and dancing, and observing and nurturing plants in the garden. Froebel developed 'gardens for children' where they could participate in growing, harvesting and preparing seasonal harvest. In 1909 Montessori also identified that gardens could help children develop patience, enhance moral education, increased responsibility and improve appreciation for nature and relationship skills (Beatty, 2011; Bowker & Tearle, 2007). School gardens continue to play a role in education today. For example, in the United States, in 1998, it was found that 78% of Virginia's elementary (primary) school teachers had a high level of interest in the use of horticulture and gardening as a classroom teaching tool (Dobbs, Relf, & McDaniel, 1998). Around this time California's Superintendent for Public Instruction called for "a garden in every school", which resulted in state legislation being passed to provide small start-up funds for schools (Graham & Zidenberg-Cherr, 2005). By 2002 over 2000 school gardens in California were being used to support academic instruction (Ozer, 2007). Parents too were seeing the importance of gardening. After US First Lady Michelle Obama started a garden at the White House for her daughters in 2009, many Americans followed suit (Draper & Freedman, 2010).

Programmes encouraging children to cook and eat food they have grown, have gained in popularity and are seen by many as a promising strategy to address obesity and improve dietary intake (Gibbs, Staiger, Townsend, et al., 2013; Lautenschlager & Smith, 2007; McCormack, Laska, Larson, & Story, 2010; Ozer, 2007; Pothukuchi, 2004; Robinson-O'Brien, Story, & Heim, 2009). International programmes which use gardens for interdisciplinary educational purposes are diverse and include: the "Kitchen Garden Project", "Pop-Up-Farm project", "Garden-based learning", "Garden Mosaics", "Nutrition Program", "Gardens for Bellies", "Sprouting Healthy Kids", "Edible Schoolyard", "Earthworks" the "School Garden Program", "Junior Master Gardener" "Gardens for Life" and "Farm to School" (Bowker & Tearle, 2007; Christian, Evans, Nykjaer, Hancock, & Cade, 2014; Clarke, 2012; Dirks & Orvis, 2005; Evans et al., 2012; Gibbs, Staiger, Johnson, et al., 2013; Krasny & Tidball, 2009; Ozer, 2007; Poston, Shoemaker, &

Dzewaltowski, 2005; Ruiz-Gallardo, Verde, & Valdés, 2013; Wistoft, 2013). Benefits of such programmes are reflected in: nutrition, exercise, school bonding and attachment, conservation and ecological commitment, parental and community involvement, peer interactions and relationships, attitudinal, behavioural and school attendance (Heim, Stang, & Ireland, 2009; Koch, Waliczek, & Zajicek, 2006; Lautenschlager & Smith, 2007; Libman, 2007; Morgan et al., 2010; Ozer, 2007; Wang & Stewart, 2013; Wistoft, 2013). Academic outcomes have also been linked with school gardens (Williams & Dixon, 2013). Disciplines such as science (Blair, 2009; Klemmer, Waliczek, & Zajicek, 2005; Rye et al., 2012; Yu, 2012), maths, writing, language, art, social studies and environmental education have incorporated learning in the context of a garden (Bartosh, Tudor, Ferguson, & Taylor, 2006; Cutter-Mackenzie, 2009; Williams & Dixon, 2013). However, research into the effectiveness of these programmes is proving inconclusive and more research is urgently needed (Draper & Freedman, 2010; Gibbs, Staiger, Johnson, et al., 2013; Graham & Zidenberg-Cherr, 2005; Ozer, 2007). In addition, there does not appear to be any research that investigates the potential of school gardens as a context for technology education.

Technology Education

Generally technology education is a practical and hands-on subject (Jones, Buntting, & de Vries, 2013) which encourages lateral thinking and multiple solutions (Ministry of Education, 1995). Authenticity is seen as an essential aspect of technology and generally refers to an action or activty being ‘real’ to students and their lives (Dakers, 2005; Hennessy & Murphy, 1999; Mawson, 2003; Turnbull, 2002), whilst also including the use of real tools and information (Hill & Smith, 2005; Medway, 1992; Turnbull, 2002). The setting and/or the tasks are expected to be meaningful to the students (Dakers, 2005; Hill & Smith, 2005), whilst learning should generally be situated and involve communities of practice (Dakers, 2005; Hill & Smith, 2005; Lave & Wenger, 1991; O'Sullivan, 1999). In this way teachers are not seen as distributors of knowledge but rather facilitators of learning, whose role is to support and guide students.

As technology is socially constructed, values are naturally imbedded within it (Conway, 1994; Jones et al., 2013; Pavlova, 2006). For this reason exploring values has been a key part of the New Zealand technology curriculum since its inception in 1995 (Mawson 1999; Ministry of Education, 1995, 2007).

Technology is also interdisciplinary by nature (Bernhard, 2007; Hoepken, 2006) and many teachers are easily able to weave science, art, language and maths into classroom programmes (O'Sullivan, 2010). Not only can subjects be taught through technology, the subject itself has many disciplines. This inlcudes cooking, home economics and food technology which is, or has been a part of many nations’ technology curriculum (Ferguson, 2009; McLaughlin, 1996; Ministry of Education, 2000; Pratt & Mahoney, 1993; Rutland, 2006).

Gardening as a Context for Technology Education

Technology education in *The New Zealand Curriculum* (Ministry of Education, 2007) requires students to learn about, through and with technology. In order for students to become technologically literate they must learn practical skills, consider the impact of technology on and from society as well as managing themselves and resources. Kitchen gardens, although rarely considered a context for such learning provides an excellent vehicle loaded with potential.

Gardening provides an opportunity to link with communities of practice (Krasny & Tidball, 2009; Lave & Wenger, 2000). Kitchen gardens are multifaceted and engage students with a wide range of community experts to support learning about garden design, construcution, windbreaks, climbing frames, fencing, soil, composting, worm-farming, sourcing seeds and seedlings and pest control. After harvesting the produce, all manner of links with food technology are possible. Links with societal issues, healthy eating, recipe designs, cooking, food presentation and preservation to name a few. In this way gardening and the subsequent cooking

are interdisciplinary (Skelly & Zajicek, 1998) and students are able to learn about resource management (Fakudze, 2006; Krasny & Tidball, 2009) whilst integrating social values, and the knowledge of parents and other local adults (Fakudze, 2006; Krasny & Tidball, 2009). In this way, learning in a school kitchen garden is authentic and purposeful (Blair, 2009; Yeatman et al., 2014) and provides practical, hands-on interaction with no-single right solution. All of which are key requirements for quality technology programme (Ministry of Education, 1995).

The following section outlines a New Zealand organisation which offers the potential for teachers to easily integrate technology within its gardening and cooking programme.

Background to the Garden to Table Programme

In Australasia a resurgence in school gardening began in 2001 when Stephanie Alexander (renowned cook and food writer) developed the Stephanie Alexander Kitchen Garden Foundation (SAKGF) at an inner-Melbourne school (Henryks, 2011). Since this time the SAKGF has been incorporated into 837 schools Australia-wide, with around 100,000 children participating in the programme. Through the programme, eight to twelve year-olds spend structured time in a garden with edible plants and in a kitchen where they prepare meals using food harvested from the garden. This Australian programme is prescriptive and expects a minimum of 45 minutes per week in the garden with a garden specialist and 90 minutes per week with a kitchen specialist. The specialist staff plan and supervise each class with the assistance of adult volunteers from the community (Gibbs et al., 2013).

In New Zealand, the Garden to Table (G2T) programme began in a similar fashion to the SAKGF with a food writer and cook again at the helm. Catherine Bell started the programme in 2008 with a group of like-minded people and three pilot schools joined in the following year (Dickinson & Gregory, 2012). Currently, there are 33 schools involved and by the end of 2015 a total of 45 schools will be involved. Both programmes are backed by not-for-profit trusts (Garden to Table, n.d.), however in 2014, G2T decided it was time to develop a programme that reflected the New Zealand educational context and started functioning independently from the SAKGF.

Identifying successful New Zealand based implementation strategies is seen as useful for New Zealand teachers considering using school kitchen gardens. This is because *The New Zealand Curriculum* (Ministry of Education, 2007) and context is very different from that of other nations. It encourages community engagement, innovation, inquiry and curiosity. Students are expected to be actively involved, confident, connected and life-long learners. This curriculum is based on the competencies of managing self, relating to others; participating and contributing; thinking creatively, critically, metacognitively and effectively; and using language, symbols and texts (Ministry of Education, 2007). It is not prescriptive but rather "gives schools the scope, flexibility, and authority they need to design and shape their curriculum so that teaching and learning is meaningful and beneficial to their particular communities of students" (Ministry of Education, 2007, p. 37). For this reason New Zealand teachers can adapt and modify ('pick and mix' from) international resources but generally prefer resources which have been generated in New Zealand as these resources tend to be informative guides rather than step-by-step rigid plans.

Proposed Reseach:

The use of gardening in the 20th and 21st centuries has been largely left open to interpretation. The pedagogies employed and curriculum links (if any) have been left to schools and teachers to select and have largely been influenced by social, cultural and political factors (Johnson, 2012). Dirks and Orvis (2005) suggest that teachers utilise a variety of resources (books, activity manuals, websites and programmes) in a search for ideas about integrating gardening into their already overflowing curriculum. Furthermore, managing a successful school garden presents

issues for teachers. In 2005 North American research was published which investigated the perceived attitudes and barriers associated with school gardens by 592 primary (elementary) school teachers as well as the purpose and use of the gardens in these teachers' schools. Approximately 60% of these teachers believed that lack of gardening knowledge and lack of curricular material were barriers to effective use of their school gardens (Graham & Zidenberg-Cherr, 2005).

Although the number of school kitchen gardens is increasing one needs to question their value in a school's curriculum. Logic would tell us that planting and growing plants in order to learn to cook for others has to be beneficial but the majority of research findings are inconclusive and generally anecdotal. Minimal research into what programmes are evident, why they have been established and the effects these programmes have on the learners and the community is sporadic and inconclusive (Draper & Freedman, 2010; Gibbs, Staiger, Johnson, et al., 2013; Graham & Zidenberg-Cherr, 2005; Henryks, 2011; Ozer, 2007). This paper outlines the research proposals of two small scale New Zealand studies planned to begin addressing this dearth of knowledge, particularly in the New Zealand context.

Research Project One:

The first research project investigates what kitchen and gardening specialists, classroom teachers and their principals perceive to be the purpose and nature of the G2T programme. It is hoped that these findings will inform programme implementation and professional learning to support stakeholders involved in the programme as well as assisting in the development of resources to support children's learning.

The research question is:

What do key stakeholders involved in Garden to Table perceive to be the purpose and nature of the Garden to Table programme?

The implementation, teaching and resulting student learning from programmes is substantially affected by the underpinning teacher beliefs (Keys & Bryan, 2001). Therefore, the introduction, and resulting enactment and learning from a programme such as Garden to Table into the school curriculum might also be impacted by the beliefs of a variety of stakeholders, including not only the specialists (gardeners and food experts) and teachers, but also the Board of Trustees and school principal. Anderson (2015) stated that understanding these beliefs and perceptions can allow for future design of professional development initiatives. Identifying common expectations and understandings amongst stakeholders, in conjunction with exploring any gaps that may be evident, will enable school management and the Garden to Table staff to tailor implementation, as well as support professional development initiatives in order to assist enactment of the programme within New Zealand schools for the benefit of children's learning.

Participants in the G2T programmes will be selected via purposive sampling by utilising the G2T website. This website publicly identifies participating schools and from here nine schools will be selected. Selection will be based on experience within the programme. The first three schools on the website, identified as new to the programme (with less than one year's involvement) will be selected, as will three schools with two to three years' experience and three well established schools (four plus years of programme implementation). The principals of these schools will be emailed information sheets and consent forms. The email will request that the principal approach the lead teacher and food and gardening specialists to invite them to participate in the research by completing a questionnaire. From the completed questionnaires, three schools will be selected for school focus group interviews. Selection will be determined by the nature of the responses (ones with details that can be probed) and will ensure that one school is new to the programme, one with two to three years and one with four plus years of programme implementation. In each school, four different people involved in the programme will participate in a focus group interview lasting around 45 minutes - the Principal, the

facilitator teacher (lead person who co-ordinates the school's programme) and the food and garden specialists – as these are the key staff involved in daily programme enactment.

Research will commence once ethics approval has been granted by the University of Auckland Human Participants Ethics Committee. Data will be analysed using Braun and Clarke's six step thematic analysis process (Braun & Clarke, 2006). The commonality of responses will be investigated across the four staff groupings (principal, facilitator/lead teacher and food and garden specialists) and the experience in the programme (less than one year, two to three years and four plus years of programme implementation). Findings will then be compared with international findings. The data will be reanalysed to see if additional codes present in international findings are also present in this New Zealand study. These findings should prove valuable for schools already in the G2T programme, schools using gardening and cooking to support children's learning and those considering joining such programmes by providing possible directions for future planning.

Research Project Two:

The second research project aims to investigate the implementation of the G2T programme in the Auckland setting. This will include investigating how this programme is used to support technology education. It intends to develop an understanding of the pedagogical decisions used by facilitator teachers to translate G2T into their classroom programmes to enhance student learning. Findings will identify the concepts that are being selected, the order in which they are being taught, the pedagogical strategies being used and the way the teacher is able to use the G2T programme to enrich or access other areas of the curriculum (e.g. Technology education). Thus far, no similar research has been carried out in New Zealand schools. There is a need to identify teachers' pedagogical strategies and resources that they use in order to identify strategies and resources that lead to effective learning for children.

This interpretive-qualitative study involves concept mapping, semi-structured interviews, and document analysis of teachers' planning. Purposive sampling (Cohen, Manion, & Morrison, 2011) will identify six high-performing Auckland schools by referring to exemplary schools showcased on the G2T website. The individual semi-structured interviews will be conducted with five to six participants. These interviews will be approximately 60-90 minutes in length and designed to investigate the pedagogies, skills, decisions and resources that the teachers use to implement the concepts that they teach.

It is hoped that these interviews will be able to provide a detailed description of what is happening in the selected G2T schools. During these interviews participants will generate a concept map, which will be used to provide insight in to the Pedagogical Content Knowledge (PCK) of participants (Shulman & Sherin, 2004). These maps are a way for participants to organize and represent the decisions made, along with the resources, skills, knowledge and methods used in teaching as well as illustrating the relationships between these elements. The concepts that the participants include will offer the opportunity for questioning and discussion in order to clarify the interrelationships between concepts. The concept maps will be themed in terms of the components of PCK. This method was shown to be an effective data gathering tool in a multinational (England, India and Kenya) study investigating perceptions and understandings of school gardening (Bowker & Tearle, 2007). Open-ended questioning during the interviews will also provide a deeper understanding of planning documents.

During these interviews the teachers will also be asked to share the ways in which they implement G2T. They will be asked to bring to the interview any examples of resources and specific lesson plans that could also be discussed. Resources and teacher planning documents will be analysed using thematic document analysis (Braun & Clarke, 2006). Interviews will be transcribed, themed/coded and analysed.

Conclusion:

Technology education focuses on authentic learning involving communities of practice and yet rarely are kitchen gardens seen as a context for such practice. Growing, harvesting, cooking and sharing food offers the opportunity for a crossdisciplinary approach to teaching and learning. The opportunity for authentic and meaningful learning is provided in a variety of forms. Schools around the world are seeing the value of linking gardening and cooking in helping to address many social and educational issues. Each school and country has a different approach and each has valuable knowledge to share. This paper has outlined two proposed research projects and it is hoped that these findings will add to the body of research about how the context of school gardens can lead to more effective learning for students.

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