Australian Journal of Teacher Education

Volume 43 | Issue 11 Article 6

2018

Education for Sustainability Policies: Ramifications for Practice

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Abstract: While it is well understood there is an urgent need to address global environmental problems, there is less understanding around how these problems can be addressed. At each level of government, policy is initiated as a response to a perceived problem. However, research has shown governmental policies are overly generalised which creates a universal approach, with little regard for contextual difference. This paper seeks to push back against unspoken assumptions surrounding Education for Sustainability (EfS) policy processes from development to implementation, showing that context is important in the interpretation of policy. Through a mixed method survey, the findings illustrate how EfS policies are often overloaded with infrastructure rather than educational benefits, minimising the policy objectives for sustainability as a cross-curricular priority. Three key points are raised to advocate for a new 'systems thinking' approach to policy implementation, with ramifications proposed to enable a more effective enactment of Education for Sustainability into curriculum.

Introduction

Global environmental concerns are becoming increasingly urgent (Flannery, 2009; UNESCO, 2014) with many governmental bodies in Australia and around the world continually writing and rewriting policies in an attempt to address them (Dovers, 2005). This paper seeks to question the "processes of policy implementation" in relation to Australian government policies formulated to address environmental concerns and problems (Tatto, 2012, p. 2). More specifically, it seeks to highlight the inherent difficulties in "interpreting and translating" (Lea, 2013, p. 14) Environmental Education for Sustainability (EEfS) policies into practice in local educational settings in an Australian context.

For more than the past four decades, there have been many permutations and interpretations of "different orientations, paradigms and ideologies" which have informed and shaped environmental education in Australia (Payne, 2016, p. 70). During this time, the concept of environmental education (EE) has emerged through international, national and state policies that were "initiatives predominantly directed and developed by UNESCO" (Cutter-Mackenzie, 2009, p. 24). Cutter-Mackenzie described this as a time when the notion of an environmental "crisis" had become the incentive to seek a solution to environmental issues that were becoming increasingly evident, such as, water, poverty and over-population. Since the late 1980s, international policies referred to the "need for sustainable development" of the world's resources (Cutter-Mackenzie, 2009, p. 43). However, this term has changed more recently to reflect broader aspects of sustainability other than purely an economic

purpose for saving the world (Davis, 2010).

Almeida (2015) takes Davis' contention of a shift from purely economic development and asks further questions such as, "whose development" and "what resources" should be promoted and saved, and "for whom?" Over time, the terminology used to describe the world's understanding of global environmental issues has caused debate as it has shifted with different policies and ideological approaches between environmental and sustainability terms (Almeida, Moore & Barnes, 2018; Cutter-Mackenzie, Edwards, Moore & Boyd, 2014). This disparity has led Davis (2010) to claim that the term 'sustainability' is a "confused and contentious topic that has no universally accepted terminology or definition" (p. 2). As a consequence of this more recent philosophical shift in thinking, it is more common now to see terms such as 'sustainability' or 'education for sustainability' (EfS) or more recently, 'environmental education for sustainability' (EEfS) in preference to 'sustainable development' (SD). While there has not been any universally accepted understanding of what 'sustainability' means (Davis, 2010), there has been an accepted understanding that education is the medium through which many present and future environmental issues can be addressed (Kuzich, Taylor & Taylor, 2015). As a consequence, the term, Environmental Education for Sustainability or EEfS has become increasingly used on a global basis when discussing ways to approach environmental concerns from an educational stance. In our work as researchers and for the purpose of this paper, we have used the term EEfS to reflect the more current understandings of these concepts (Almeida, Moore & Barnes, 2018).

The basis of this paper is a commissioned evaluation of a website implemented through policy delegated by an Australian state/territory government. Please note for confidentiality purposes, the state/territory will not be disclosed in this paper. The original policy and the subsequent website were instigated to provide educational benefits and promote sustainability as a cross-curriculum priority in schools and early childhood centres. However, the identified findings from the evaluation illustrate how Australian policies are 'overloaded' with infrastructure (such as an emphasis on energy efficacy, identifying water leaks and installation of solar panels) rather than education, and hence, have not been effective in incorporating sustainability into the curriculum. The findings and discussion presented in this paper are pertinent to and specifically derived from this particular program, the findings of which may be transferable but are not generalizable.

The paper first explains the terminology commonly used in the field of sustainability. This includes the use of contested terms that are linked with different ideologies, and the shift from "sustainable development" towards a more holistic, broader view of sustainability. Next, it will outline international, Australian national and state/territory policies relating to Environmental Education for Sustainability, and how they have emerged as iterations of previous polices over time and with increasing urgency. Following this, the context of the evaluative survey will be explained. Specific data will be presented illustrating teacher, principal and business manager responses to survey questions around their engagement with governmental policy initiatives. In discussing these responses, a lack of interpretation and translation of policy at a local level of delivery become evident. Finally, we advocate for a systems thinking approach to Environmental Education for Sustainability. In doing so, we contend that the multilayered, contextual differences of educational settings need to be considered as influential 'parts' of the whole implementation and delivery of EEfS policy.

The Role of Governmental Policy in Education for Sustainability

Policy is about change. At each level of government, policy is developed from a perceived problem, and is therefore designed to change and re-structure society and individuals in certain specified ways to address (or solve) that perceived problem (Lea, 2013). Lea (2013) argues further that there is "always a struggle" (p. 13) between the implementation of mandated policy and the way the policy is "interpreted and translated into practice" at the "local delivery level" (p. 14). That is, the way policy is "interpreted and translated" does not always align with the way it was intended by policy writers. Fast (2016) reinforces this argument by suggesting policy writers commonly "draw on existing repertoires of viable policy ideas and ideologies, often from other countries or international actors" with seemingly little consideration of "great contextual variation in how local dynamics shape […] policies" (pp. 60-61). This idea of policy writers drawing on existing policies demonstrates how policies are positioned within policies, so that every new policy can be seen to be an iteration of previous policies. Of particular concern and relevance to this paper, Fast (2016) has found there is a significant lack of consideration for "contextual variation" during policy writing.

Policy is the way government seek to reform educational systems. Australian educational policies are informed and influenced by past national and international policies developed by "networks of politicians, professionals, intellectuals and scientists" to address identified problems (Fast, 2016, p. 60). This can be seen in relation to the current international push to "improve educational systems and performance [based on] an accountability culture of outcomes" (Tatto, 2012, p. 2). However, within this heightened "accountability culture" there has been little attempt to question and analyse the "processes of policy implementation" (Tatto, 2012, p. 2). Rather, once policies have been formulated, there is an assumption that the "problem" will subsequently be resolved without taking into account the contextual interpretation and translation of policy into actual practice.

In Australia, and indeed the world, sustainability has become an increasingly urgent "problem" to be addressed through policy (UNEP, 2007). In a more recent Australian response, national, state and territory educational policies have been formulated to include sustainability in all Australian curriculum frameworks as a cross-curriculum priority (ACARA, 2012). However, Aikens, McKenzie and Vaughter (2016) argue there has been limited research on the application "cycle" of educational policy around sustainability (p. 333). They claim instead that "what documentation exists, tends to be government self-reports" highlighting successes, and silencing problems or failures (p. 334). Stevenson (2013) also claimed there has been a systematic silencing of any critical response to educational policy relating to sustainability, suggesting the "agency of respondents is not acknowledged or supported" at a governmental level (p. 154). This paper seeks to make visible some of the problems entrenched in the policy cycle and implementation around Australian EEfS policies.

From International to National to State Policies to Implement EEfS

Rapidly increasing over the past fifty years, there has been worldwide acknowledgement that the conservation of the global environment needs urgent attention (Gough, 2011; McCabe, 2003). As a response, a plethora of documents, reports and strategies have emerged within the landscape of international, national and state policies seeking to solve the problem of how to create a more sustainable world (Davis, 2010). There are many examples of policies implemented over time and in a variety of different contexts which illustrate how education was seen to be the key solution to solve increasingly urgent

environmental problems.

Linke (1980) defined the 1972 United Nations *Conference on the Human Environment* in Stockholm as a pivotal moment in garnering international support and recognition for environmental conservation and education. Numerous agencies, conferences and events followed, which further shaped key environmental education understandings from the 1970s through to the 1980s which Gough (2011) has identified as: the UNESCO-UNEP *International Environmental Education Program* (IEEP) (1975); the UN *Belgrade Charter Workshop* (1975); and, the UNESCO *Intergovernmental Conference on Environmental Education*, Tbilisi conference (1977). By this stage, EE was said to be the "priority of priorities" in international governmental policy (Kuzich, Taylor & Taylor, 2015, p. 180). The *World Conservation Strategy* (1980) shifted the discussion toward sustainable development and the need for conserving natural resources to achieve this; whilst, the *World Commission on Environment and Development: Brundtland Report* (1987) further embedded education for sustainable development as a key agenda in the report to combat the ensuing environmental crisis (McCabe, 2003). The *Rio Earth Summit* in 1992 concluded the "world's teachers" were the best way to implement change in relation to environmental problems, and so, educational policies were developed to "solve" these problems (Kuzich, Taylor & Taylor, 2015, p. 180).

By 1984, Australia had moved towards joining the global trend in sustainability policy with the *National Conservation Strategy for Australia* that focused on educating communities towards sustainable development and conservation (Gough, 2011). Later, in 2000, the Australian government set up a *National Advisory Council*, network and research program in recognition of the need for EEfS, with the view to develop policies that were based on sound research around practice. This national action plan laid the foundation for all subsequent policy documents and plans, in particular, Australia's participation in the UN *Decade of Education for Sustainable Development*, 2005-2014 (Davis, 2010). It was during this decade, that the *Global Environmental Outlook GEO-4 Report* (2007) conceded that the "human species is living beyond its means" (Davis, 2010, p. 5). Further to this, Davis (2010) argued it was the *UNESCO's Decade of Education for Sustainable Development* which finally triggered "agenda setting and concrete actions around sustainability and EfS" (p. 11). For example, the *Australian Sustainable Schools Initiative* (AuSSI) was set up and supported through infrastructure resourcing by the Department of the Environment, Water, Heritage and the Arts in 2004. The following statement explains the parameters of this initiative:

> *The Australian Sustainable Schools Initiative (AuSSI) is a partnership of the Australian Government and the states and territories that seeks to support schools and their communities to become sustainable. AuSSI engages participants in a whole-of- school approach, to explore through real-life learning experiences, improvements in a school's management of resources and facilities including energy, waste, water, biodiversity, landscape design, products and materials. It also addresses associated social and financial issues. The Initiative's vision is for all Australian schools and their communities to be sustainable. (cf: The Department of Sustainability, Environment, Water, Population and Communities 2011, n.p.)*

It is interesting to note here the reference to "improvements in a school's management of resources" as one of the prime purposes of the AuSSI initiative. In line with its apparent support for EfS, the Australian government followed on from the AuSSI initiative and launched the *National Solar Schools Program* (NSSP) in 2008 to promote energy education in primary and secondary schools. One of the five key objectives of NSSP was to "allow schools to provide educational benefits for school students and their communities" (DRET, 2013, p. 85).

The *Melbourne Declaration on Educational Goals for Young Australians* (2008), building on previous Adelaide (1999) and Hobart (1989) declarations, was a key policy document prepared by all Australian Education Ministers that described the social and economic benefits of improving educational outcomes for children. In acknowledging the role of education towards building a "just society" the Melbourne Declaration stated that:

> *Complex environmental, social and economic pressures such as climate change that extend beyond national borders pose unprecedented challenges, requiring countries to work together in new ways. To meet these challenges, Australians must be able to engage with scientific concepts and principles, and approach problem-solving in new and creative ways. (Ministerial Council on Education, Employment, Training and Youth Affairs, 2008, p. 4)*

The previous *National Action Plan* (2000), the *UNESCO Decade of Education for Sustainable Development* (2005-2015), and, the *Melbourne Declaration* (2008) set the background for the ensuing National Action Plan for the EfS policy framework, *Living Sustainably: The Australian Government's National Action Plan for Education for Sustainability*, launched in April 2009. The aim of this policy was for all Australians to understand what was required to live a sustainable life. The policy plan had been prepared in conjunction with the *National Council on Education for Sustainability* by the Australian Government Department of the Environment, Water, Heritage and the Arts. Following on from previous international and national policies, this policy set out a framework establishing the Australian Government in a leadership role in EfS as an "exemplar" in the field (National Action Plan for Education for Sustainability, 2010, n.p.). In this National Action Plan, the Australian Government claimed they were particularly interested in "reorienting education systems to sustainability… by continuous improvement in the sustainability of campus management" (National Action Plan for Education for Sustainability, 2010, n.p.).

Interestingly, the blurring of the lines between a focus on infrastructure rather than purely education was already taking place in this and other policy directions. Notably, in 2010, the *Australian National Curriculum* (ACARA) organisation established sustainability as a cross-curriculum priority to be taught through an infusion with other disciplines and content areas, as depicted here in the following statement:

The Sustainability priority has been developed around three key concepts: systems, world views and, futures. These concepts are seen as fundamental to learning about sustainability. Each key concept contains a set of organising ideas that provide a scaffold for developing related knowledge, understanding and skills. These are embedded in each learning area according to the relevance of its content to the organising idea. An organising idea may draw on content from more than one learning area. Taken as a set, the organising ideas provide a coherent framework of the priority (Retrieved from the ACARA website, http://v7-5.australiancurriculum.edu.au/CrossCurriculumPriorities/Sustainability).

While this cross-curricular policy was seen to place an emphasis on EEfS, how this was to be implemented and supported across schools and early childhood settings was and still is highly contentious. This is especially true given the heightened emphasis on literacy and numeracy skills, and the increased support given to teachers to work intensely on these subject areas. Although the key focus appears to be on standardised assessment tasks to test literacy and numeracy, no particular assessment has been attributed to attaining the significant skills inherent in EEfS (Barnes, Moore & Almeida, 2018).

Context of the Study

In 2008, the Australian Government's National Solar Schools Program (NSSP) offered primary and secondary schools the opportunity to compete for grants to install solar and other renewable systems. With 86 schools participating in the program, the State/Territory government this study was based on chose their preferred Data Collection, Storage, Visualisations System (DCSVS) (Department of Resources, Energy & Tourism, 2013) in the form a smart meter website. The smart meter website was designed to provide live data that was collected from installed smart meters at each of the 86 participating schools which gauged the consumption of electricity, solar, water and gas. On its home page, users were able select a school from the dropdown menu or click on a map of the region. Once the user chose a school either from the dropdown menu or the map, there was some general information about the school and some of its key sustainability initiatives. There were options to check usage for electricity, solar, water and gas. The website also offered opportunities to compare the selected school's practice with another early childhood, primary or secondary school in the region (Barnes, Moore & Almeida, 2018). As previously indicated, "educational benefits" had been identified as one of the key objectives for the NSSP in educational settings (DRET, 2013, p. 85). However, in a recent report by the Department of Resources, Energy and Tourism (2013), it was identified that even with the implementation of the NSSP and the Australian curriculum's prioritisation of sustainability across content areas, "less than 50% of surveyed schools nation-wide incorporated the subject of energy efficiency in their learning materials" (p. 88).

The aim of this study was to evaluate one example of an Australian State/Territory Government's Data Collection, Storage, Visualisation System (DCSVS) in light of NSSP's objective to provide educational benefits; together with and the Australian curriculum's aim to promote sustainability as a cross-curriculum priority. The research questions were subsequently informed by these aims to examine how EEfS was positioned in the schools and early childhood services within this particular State/Territory. Therefore, the research questions were:

1. How is the DCSVS implemented and used in the classroom?
2. How is the DCSVS implemented, used, and promoted by school leaders and centre managers?
3. What links are made between the DCSVS and the sustainability curriculum aims?
4. What are the attitudes towards the DCSVS and how could it be improved to further EEfS educational outcomes?

Theoretical Underpinning of the Study

The UN Decade of Education for Sustainable Development (2005-2014) may have prompted a groundswell of awareness about the urgent need for sustainable living (Davis, 2010); however, in reality, the world's resources and ecosystems are still in rapid decline (Goekler, 2003; Lapp & Caldwell, 2012). Therefore, a different way of looking at the world's environmental issues is needed. As researchers, we consider the use of systems thinking a valuable theoretical framework in which to position this study because it provides the opportunity to be "big-picture thinkers, able to consider the multidimensional and complex nature of the world and its problems…" (Lapp & Caldwell, 2012, p. 492). Dominici (2015) takes this notion further by suggesting that systems thinking is a relevant way to think about contemporary environmental problems because it demonstrates the interconnectedness of societal issues. He contends that we need to consider a broader world view of multiple

perspectives, rather than a 'one size fits all' solution (Dominic, 2015, p. 1). Similarly, Goekler (2003) argued that systems thinking allowed for a "new vision" in which to seek solutions around sustainability, and states further: Systems thinking is simply a perspective, a language and a set of tools for describing and understanding the forces and interrelationships that shape the behaviour of systems. A system is defined as a collection of parts that interact to function as a whole and continually affect each other over time. Systems are not only interconnected, but they are coherently organised around some purpose. (p.12)

Goekler's (2003) understanding of systems thinking is a useful starting point for this study, particularly in the way he highlights the interdependency between the elements embedded in a system, for example, through an "iceberg model" (p. 11). An adaption of Goekler's (2003) "iceberg model" is seen in Figure 1 below with our particular research parameters embedded within the systems as suggested in the former model.

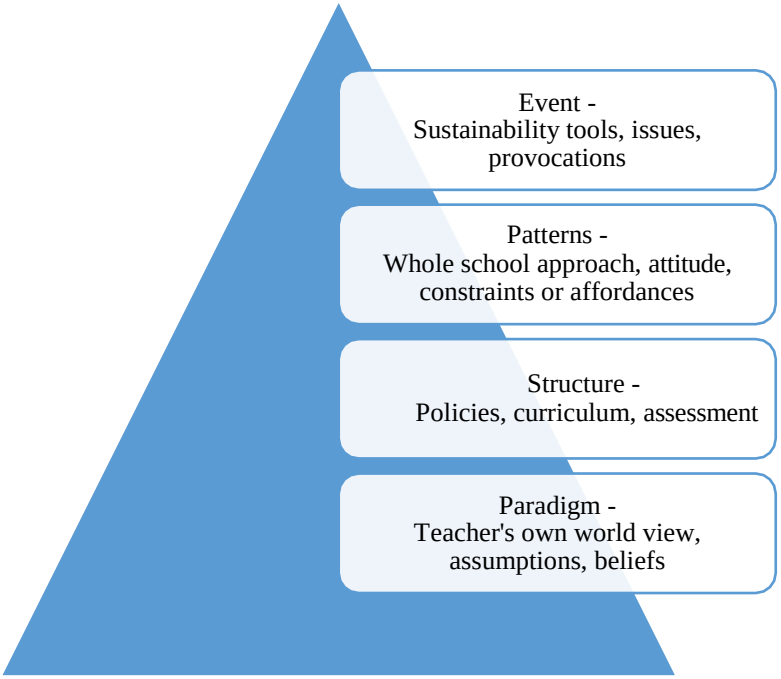

Figure 1 Visual representation of the systems thinking theory used to explain the theoretical underpinning of the study.

For this study, we consider systems thinking best represents our ontological understanding that individuals do not work in isolation. Instead, individuals can be seen to operate within a multilayered range of 'systems' that may encourage, enable, distract or constrain teacher/school leader/school communities toward understanding, determining, negotiating, and implementing EEfS in practice. Each of the elements collectively inform and influence the individuals who, and processes that, operate within the system. In this adaption of Goekler's (2003) model the "event element" includes the issues that may or may not trigger the need to enable the tools to implement EEfS within educational settings. Next, "patterns" represent the attitudes of those within the educational setting, if an overall approach to addressing EEfS is acknowledged as important or if it is not part of the agenda or culture of the setting. The third element of "structure" signifies the higher-level policies that are intended to impact on the set curriculum, and if they in reality have any influence on what actually happens in the classroom. Finally, the "paradigm element" represents the teachers' own assumptions and belief systems, and how they shape their teaching and curriculum design decisions. In line with the theoretical underpinning of this study, the research

methodology was designed to capture multiple perspectives, knowledge and experiences within each of the "elements embedded in a system" (Goekler, 2003) as seen in Figure 1.

Research Methodology and Methods

The data from this study was collected through Qualtrics, an anonymous online survey tool. Two distinct surveys were emailed to invite participation from 86 schools and early childhood settings in July, 2016. One survey was designed for early childhood, primary and secondary teachers; and the other, for school leaders including centre and school administrators, business managers and principals. The surveys used a mixed method format so that quantitative and qualitative questions were simultaneously provided in both a Likert Scale questionnaire as well as short answer questions (Kervin, Vialle, Howard, Herrington & Okely, 2016). In this way, questions could be asked such as, "How often?" and then, "Why?" to illustrate how the DCSVS was or was not fostering sustainability practices in educational settings. This was in line with the aim of this research project to investigate the efficacy of the DCSVS as a resource in classroom practice; and, to offer recommendations to enhance its usability in the provision of EEfS practices in the curriculum.

The survey captured the perspectives of 116 respondents, 66 teachers and 50 school leaders. Of the teacher participants, 49% were secondary teachers teaching Years 7-10 (n=31), 35% were primary school teachers teaching F-6 (n=5) and 5% early years teachers (n=3).

The remaining 11% reflected 1 teacher teaching College Years 11-12 and a mixture of K-6 (n=2), specialist science and sustainability teachers (n=2), Years 6-8 (n=1) and support teaching staff (n=1) as can be seen in Figure 2 below.

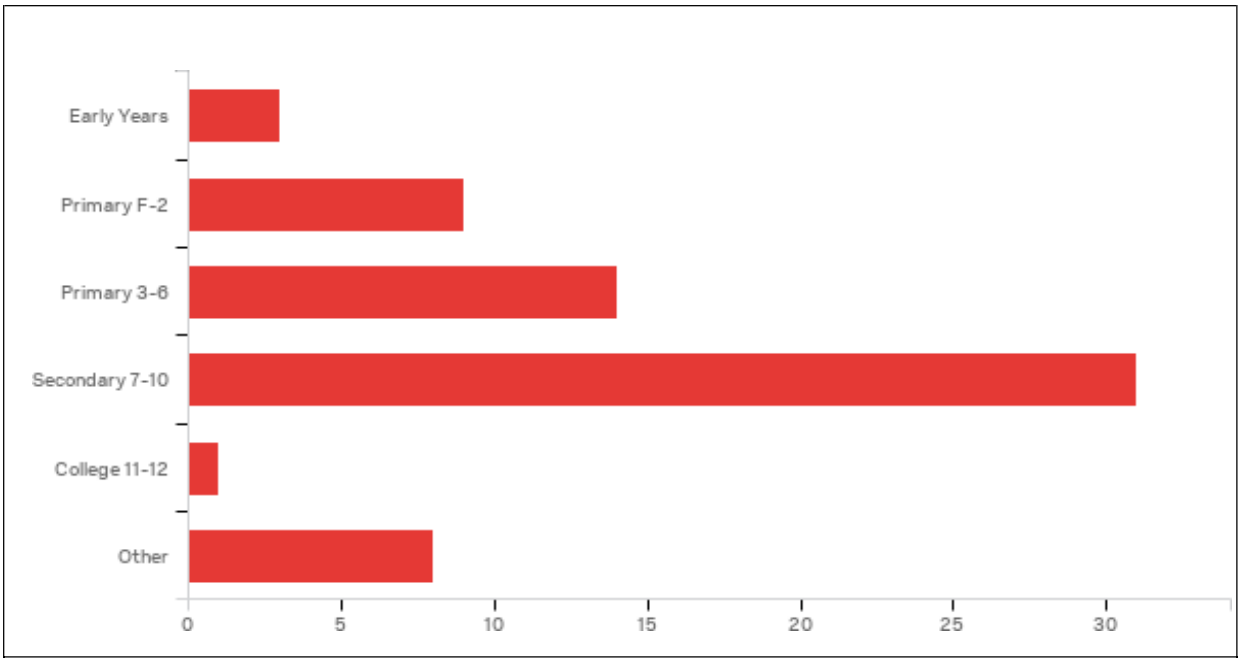

Figure 2: Educational sector response rates

Of the 50 school leader participants, 46% were principals (n=23), 34% were business managers (n=17), 10% were deputy principals (n=5) and the remaining 10% (n=5) were a mixture of administrative staff (n=2), sustainability coordinator (n=1), business service officer (n=1) and 1 unspecified (See Fig.3.).

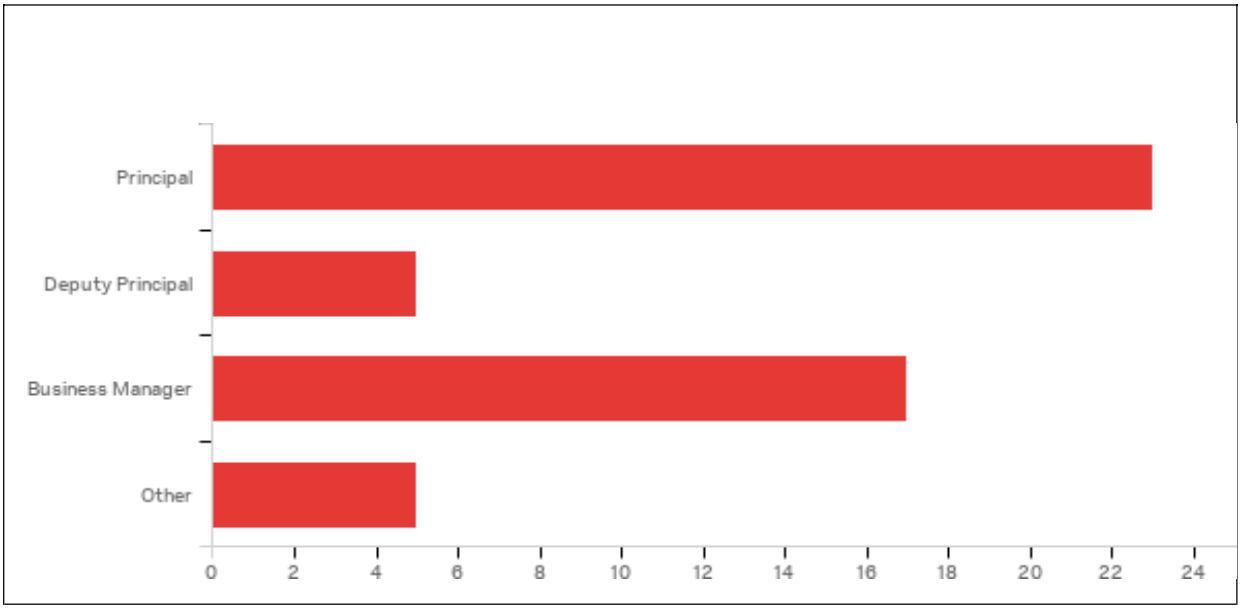

Figure 3: Roles of participating school leaders

This study identified a number of recurrent themes in the findings (such as teacher identities involved in EEfS; and, how an emphasis on literacy and numeracy overrides cross-curricular priorities). However, for the purpose of this paper, the results and discussion will focus primarily on the comparison between the school leaders use of the website in relation to infrastructure in stark contrast with website usage by the teachers for educational benefits.

School Leader Evaluation of the Smart Meter Website

In the survey sent to school leaders, nine quantitative questions, such as, Question five, 'We use this website in our school'; and, Question six, 'How does your school use this website to link to curricula aims in promoting sustainability?' were asked to ascertain the way the school leaders used the website. The following data analysis shows two forms of representation in the evaluation of quantitative evidence from the school leader surveys in response to the Question five asking 'how' they used the website in the school:

Q5 - We use this website in our school (tick all that apply):		
Answer	%	Count
N/A: We do not use this website	33.33%	16
To improve energy efficiency and reduce energy consumption	35.42%	17
To link to sustainability curricula	10.42%	5
To promote graph literacy	0.00%	0
To identify water leaks	56.25%	27
To identify low/no solar generation	29.17%	14
Other	4.17%	2
Total	100%	48

Figure 4: Evaluation of school leaders' responses to the question around website use

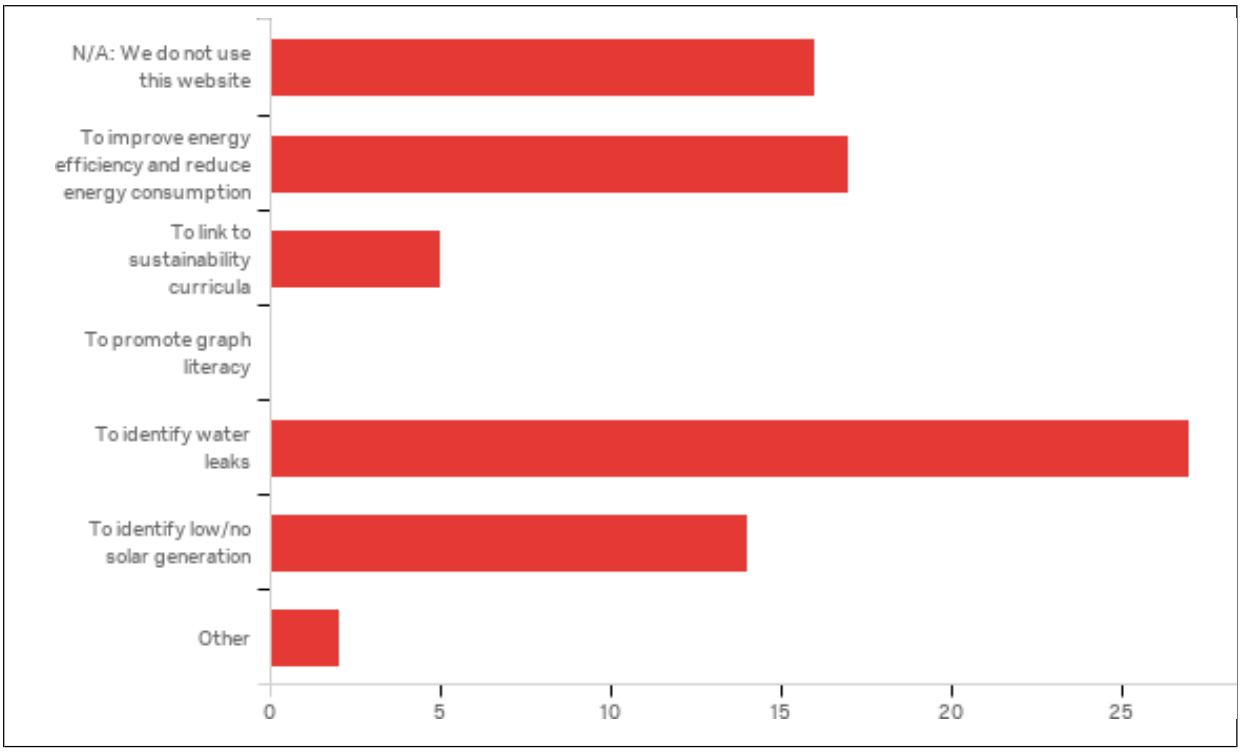

Figure 5: Graph illustrating visual representation of responses by school leaders to the website use

As indicated in the Figure 4 table and visually represented in the Figure 5 graph above, the identification of water leaks was very high (56.25%) on the agenda of school leaders in their decision to use the website. While a marked number of school leaders did not use the website at all (33.33%), comprehensive information from the website about the high consumption of energy (35.42%) was a clear motivation for use. In contrast with this emphasis on infrastructure, only 10.42% of school leaders acknowledged the website had any relevance to an EEfS curriculum in the school. Following on from this, the qualitative responses to the short answer questions on the use of the website for EfS curriculum reinforced these findings. This was evident when a high proportion of the school leaders were not able to show substantive links between the website and EEfS curricula, typically responding with "We do not currently achieve this"; "No"; and, "We don't". Many school leaders marked this question around the link between the website and EEfS curriculum in their schools with a definitive "N/A", symbolically demonstrating their perception that it was not relevant to school curricula. On review of this small snapshot of analysis, it is evident the school leaders considered the website was only applicable to assist in their 'sustainable' management of school facilities and resources. While the school leaders reported that a small amount of government training was provided specifically to them on the use of the website; they also acknowledged that the teachers were not aware of the site or that the website could provide student learning around EfS in a variety of disciplines. From this evidence, it appears that although the government policy and resources had been put in place through the website for curricula and educational benefits, the dissemination of this information to the teachers from the school leaders did not occur. The following representations of the teacher responses to the survey further reinforces this reported lack of teacher awareness of the website's existence, and consequently, their lack of website use for educational benefits.

Teacher Evaluation of the Smart Meter Website

Similar to the survey emailed to the school leaders, the teachers' survey asked quantitative questions around the use and frequency of use of the website. These questions were then followed by qualitative questions, such as, How is the website currently used?; and, How could the website be used in the future to link curricula aims in promoting sustainability? The following analysis of the data illustrates first how the teachers described themselves in relation to the website; and then, the frequency in which they used the website.

Q1 - Which best describes you?		
Answer	%	Count
What website? I had no idea it existed.	81.82%	54
I know about the website but it is not relevant to my teaching context.	0.00%	0
I have been to the website but have never used it in my teaching.	9.09%	6
I have used the information in the website in my classroom and found it a useful tool.	9.09%	6
I have used the information in the website in my classroom but did not find it useful.	0.00%	0
Other:	0.00%	0
Total	100%	66

Figure 6: Table illustrating the evaluation of teachers' use of the smart meter website

Q3 - How frequently do you use the website in teaching your students?		
Answer	%	Count
I have never visited this website.	83.08%	54
I rarely use the website.	12.31%	8
Monthly	4.62%	3
Weekly	0.00%	0
Daily	0.00%	0

Figure 7: Table illustrating the evaluation of teachers' use of the smart meter website

Initially, the overwhelmingly negative response to these two key questions as seen in Figures 6 and 7 above was highly disappointing, with over 81% of the teachers surveyed reporting they did not know the website existed; and, 83% of teachers saying they had "never visited this website". Similarly, Figure 8 below illustrates the breakdown of use of the website by teachers, visually demonstrating the vast majority did not use the website at all.

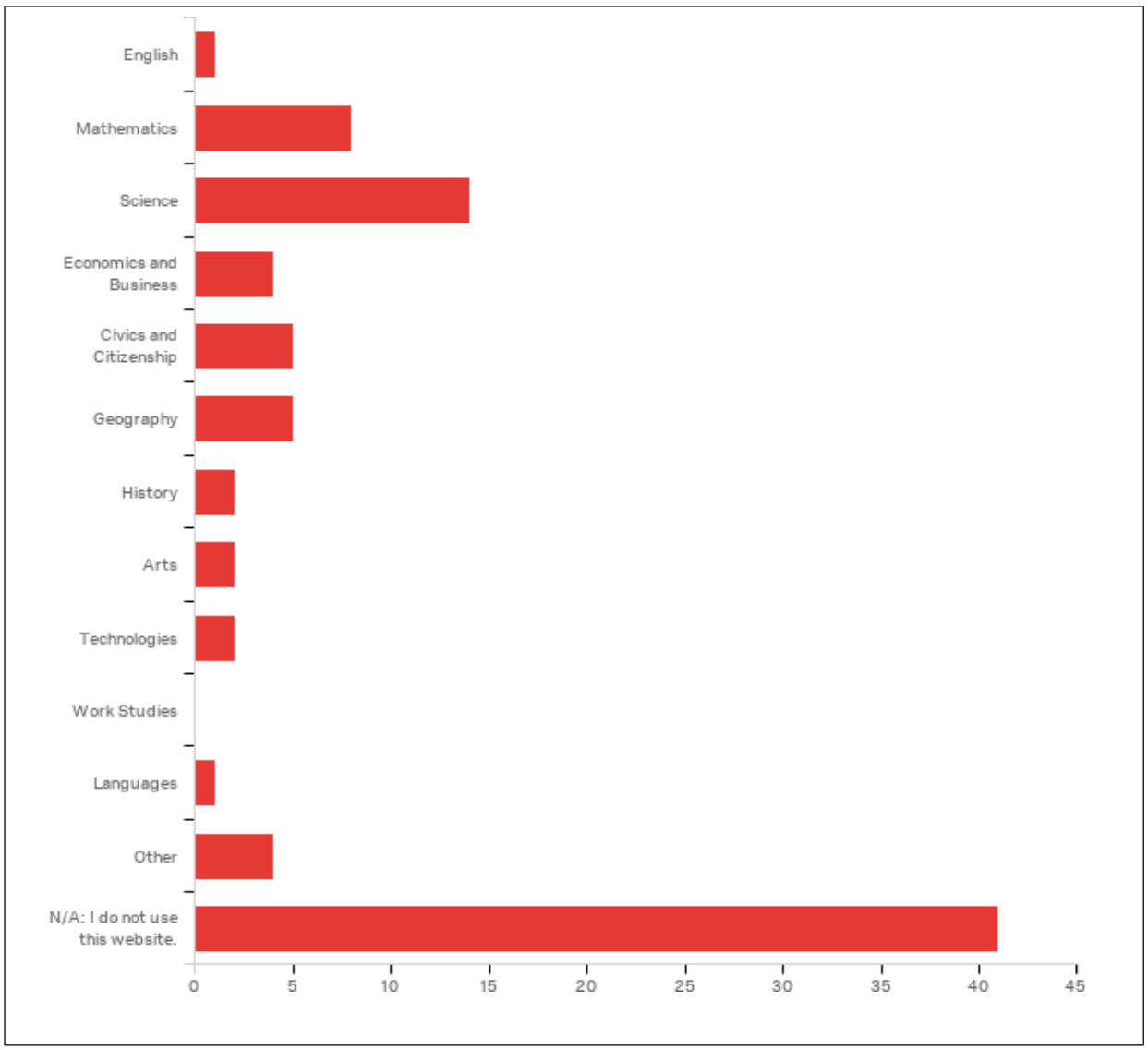

Figure 8: Table illustrating the evaluation of teachers' use of the smart meter website

However, on further analysis, this data is a very clear indication as to why the educational benefits intended by policy writers have not been translated into practice. The teachers did not know about the website. Of the very few teachers who did access the website, Figure 8 illustrates they primarily linked mathematics and science subjects with the website. There appears to be very limited attempts to incorporate and embed EEfS across the different disciplines as proposed and intended by government policy. The few teachers who were aware of the website appear to have perceived that EEfS was only linked to mathematics and science concepts, and therefore not relevant to the humanity subjects they taught; some teachers suggested there was "no time to use the website" or said "it was too difficult to analyse the data for use in the classroom"; whilst others claimed they were "not comfortable" in teaching sustainability concepts to students. Despite school leaders' overwhelmingly positive response to the 'user friendly' capacity of the website, the perception of those few teachers who knew of the website was that it was "too difficult" to use, to learn about, and to implement into their curriculum.

In Question nine, the teachers were asked a short answer qualitative question around how they currently use or plan to use the website, enabling more clarity in their explanations.

Figure 9 provides some examples of the direct quotes taken from the data collection of this question.

Q9 - How have you or how do you plan to use this website to link to curricula aims in promoting sustainability?

- A website such as this would link in very well with curriculum goals (Technologies). Has a link been provided on the Directorate website? Who is responsible for informing teachers about this site? If I could receive their contact information I would happily email them to inquire about this website.
- Now that I am aware of its existence, I will consider integrating use and data into health and civics.
- Now that I know about the website I can use it as a resource in promoting sustainability.
- I will now consult the website out of curiosity.

Figure 9: Table illustrating the evaluation of teachers' use of the smart meter website.

It can be further extrapolated from these responses that the majority of the teachers were not aware of the existence of the website prior to the survey. Importantly, they each suggested in these responses that "now that I know" they would plan to use the website in the future to incorporate the information and learning into their curriculum. In contrast to the teachers' lack of awareness, the school leaders were explicitly targeted for departmental training in the use of the website, with an apparent assumption that they would then 'trickle-down' the information and knowledge on to the teaching staff. Clearly, this did not occur. Nor does it appear that any follow-up training for teachers by school leaders in staff professional development sessions on the use of the website occurred. Similar to other researchers who have found EEfS is seen as less of a priority within the curriculum than literacy and numeracy (cf: Boon, 2011; and, Roberts & Downes, 2016), Smith and Stevenson (2017) also found it was difficult for school administrators to "push back against" a state and national government emphasis on literacy and numeracy, and as a result, "EfS efforts in both policy and practice have waned significantly" (p. 82).

The analysis of the survey illustrates that while resources may appear to be in place and provided for by government policy, the impact is severely lessened with limited educational opportunities taken up by teachers who are unaware of the resources provided. This phenomenon has occurred because firstly, there has been very little direct support given to the teachers from the government body involved; and secondly, very little support was provided by the school leaders who had been deemed responsible for 'passing on' the information to enable educational benefits to be gleaned from the website by teachers and students. This study has shown that the policy around EEfS is resource and infrastructure heavy rather than considering educational possibilities and opportunities for bringing sustainability awareness to students. Assumptions were made by Government policy writers there would automatically be a "trickle-down affect" such as Masterson (2001) proposed from management to employees in the organisations involved (p. 1848). In this case around EEfS, the school principals and business managers were supposed to "trickle-down" information about the website to the teachers in the classrooms. However, it is evident from this survey that this does not occur**.** Educational outcomes tend to only be considered as a by-product of the infrastructure around sustainability. For EEfS to be embedded into the curriculum, it needs to be overtly stipulated in educational policy rather than left to chance through an assumed "interpretation and implementation of policy into practice" (Lea, 2013, p. 14).

Ramifications for Future Policy Development with Education Firmly Embedded in EEfS

While the impetus for EEfS policy initiatives in Australia is to create positive change, the 'trickle-down effect,' according to this study, falls short of providing the educational benefits and change that the initiative had planned for. However, this may be due to Federal and State policies reducing difference and minimising context through an overly generalised approach to implementation. Policy traditionally generalises and negates the importance of context in the changes it wants to enact. Therefore, a new way of understanding the role of policy is needed in this instance. To enable EEfS to be firmly embedded into the curriculum, new ways of "thinking and acting are necessary to overcome current challenges" in the implementation of EEfS into educational settings (Davis, 2010, p. 5). Given the findings from this study, we suggest there are three possible ways that could be considered in the development of new policies and implementation of EEfS into curriculum, as follows:

1. A move away from an overload of sustainability orientated infrastructure toward more attention given to pedagogical innovations and teacher support systems;
2. A concerted shift from considering the term 'cross-curriculum' as synonymous to 'optional' – sustainability needs to be more deeply and actively embedded in teaching practices, assessments and learning outcomes; and,
3. Overtly bridging infrastructure with education in particular contexts – if teachers are not supported to focus on sustainability in their curriculum through policy (regardless of the cross-circular priority), then it will not happen long term in their classrooms.

While the findings and recommendations made in this paper derive from a single policy initiative they provide scope for understanding similar initiatives without offering any generalising perspectives. A new way of understanding the role of policies require localities and institutions to remake, renegotiate and reshape EEfS policies for effective implementation within their own contextualized educational setting. Therefore, successful implementation of policy requires a more "systems thinking approach" in order to ensure that government policies can be enacted in local contexts. This suggests that a way forward is neither a 'trickle-down' nor a 'trickle-up' process of policy implementation but a systems thinking approach which acknowledges that individual differences need to be considered as critical parts of the whole. In this new approach, therefore, Federal, State and local contexts equally inform, interrogate and reshape policies to create a more promising chance of implementation success.

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