Australian and International Journal of
Rural Education

Rural-regional sustainability in the Murray Darling Basin: School / community difference and the politics of water in rural Australia

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Abstract
In this paper we critically examine the role of rural schools as community hubs through the example of sustainability and natural resource scarcity. Drawing upon the first phase of a two-year project exploring education and sustainability in the Murray-Darling Basin (MDB) of Australia, the paper examines different understandings of community and their impact on community cohesion. A key finding has been that while both community members, and schools, regard sustainability as very important and report high levels of commitment to its pursuit, there are very different understandings of its meaning and implication for communities. The different understandings that emerged potentially creates conflict and makes the pursuit of sustainable community futures difficult. The differences observed reflect debates about community in rural areas, as well as sustainability in the research literature.

Keywords: sustainability, community, rural, policy, place based

Introduction

Environmental sustainability is a central challenge for the future viability of Murray-Darling Basin (MDB) communities in rural Australia. Faced with environmental uncertainty and its associated community and economic impacts, sustainability issues represent both a path to a prosperous future and a flash point of community conflict. Key to these tensions have been the different perspectives on sustainability adopted by communities, and the difficulty of working towards a shared understanding of the term. Taking into account critiques of community in rural-regional education debates (Corbett, 2014; Roberts & Downes, 2016), this paper will consider community views on sustainability and contributions to sustainability education. We do this in contexts where sustainability education is conducted and communities are experiencing broad conflicts over the natural resource of water. This work raises the issue that sometimes schools and communities may be working towards different outcomes and from different perspectives of a preferred future.

Those working internationally in environmental and sustainability fields have already noted "strong polarization and dichotomies" in discussions of sustainability (Mollinga, 2010, p. 415) and the complexity of not only "reconciling potential conflicts between economic growth and ecological sustainability" but also of taking into account the social dimension of sustainability (Mitchell, Curtis, & Davidson, 2008, p. 67). As Dryzek (2013) explained:

> *All these issues are interlaced with a range of questions about human livelihood, public attitudes, and our proper relation to other entities on the planet (occasionally even off it).*

> *Thus the whole environmental area is home to heated debates and disputes, ranging from the details of the implementation of policy choices in particular localities, to the appropriate construction of responses to global environmental change.* (p. 3)

In Australia, particularly in relation to the Murray-Darling Basin, Weir (2009) has noted that Aboriginal knowledge focuses on connection rather than division when understanding the land and living on it. Meanwhile, Evans and Pratchett (2013) have commented that sustainability potentially "pitches the very survival of many communities in the Basin against the worrying predictions of impending ecological disaster" (p. 541).

This paper draws upon data from a two-year, multi-phase, multi-method project designed to explore how rural communities understand sustainability, and how schools engage with this understanding. In so doing, we raise questions about such contributions to sustainability education. To explore such themes in relation to sustainability, the project methodology explicitly focussed upon rural meanings (Roberts & Green, 2013) and was organised around notions of rural social space (Reid, Green, Cooper, Hasting, Lock, & White, 2010).

We report on a survey from the first phase of the project that was designed to investigate what communities understand sustainability to mean in relation to the MDB. The analysis found that communities in the MDB are not only highly committed to sustainability, but they also have a comprehensive understanding of sustainability and its multiple dimensions of environmental, social and economic outcomes. We conclude that sustainability education, particularly in schools, has much to draw on for the development of a public-focussed approach to sustainability in the MDB (Cocklin & Dibden, 2005) that, at present, may not be fully realised.

Literature

Examination of the concept of *community* in the environmental education literature demonstrates that there is often a common narrative of community-based programs developed and enacted, with an overall complimentary view that often focuses on their benefits and the factors that gave rise to their success (e.g., Armstrong, Sharpley, & Malcolm, 2004; Flowers & Chodkiewicz, 2009; Green, 2008; Tangen & Fielding-Barnsley, 2007; Western & Pilgrim, 2001). It is much less common to consider plurality and dissimilarities in views between schools and communities in relation to environmental and sustainability education. The following literature review of sustainability and environmental education research will examine alternative ways of framing community, particularly in schools.

Common discourses pertain to relationships between schools and communities, connections with place, cooperation between stakeholders, and the social benefits of particular programs such as those that facilitate student cooperation and feelings of belonging. Some papers about school-based initiatives provide a generally positive assessment of community initiatives or the concept of community-based environmental education more broadly (e.g., Blair, 2008; Corkery, 2004). Whelan (2005) focuses on the relationship between community education and sustainability action, offering "popular education" (p. 117) as a productive framework to achieve this.

Another common narrative advocates for consilience between research and the concerns and practices of the public, but often speaks in quite general terms about any notion of *the* public, ignoring differences in opinion that might exist within and between communities (see e.g., Collier & Smith, 2009). McLoughlin (2004), for example, explores inconsistencies in political and public discourse, drawing on data from a large-scale study commissioned by the New South Wales (NSW) State Government during the development of a sustainability education program.

Black (2004) engages with this question on a more conceptual level, distinguishing ecological, economic and social sustainability, and discusses the implications for environmental educators. Although identifying different notions of community related to a multidimensional understanding of sustainability, *community* is largely expressed as a generalisable entity that lacks specificity (e.g., description of a sustainable community as having certain shared characteristics).

Other common themes in the literature are the need for broader political engagement amongst community members and the need to draw on local knowledge and practices when conducting initiatives on particular environmental issues. This is particularly the case in relation to food production and security (e.g., Davila & Dyball, 2015; Harris & Barter, 2015). However, these often seem to represent particular communities in quite general terms, in the sense that community is spoken about as a collective body in which differences of opinion within and between communities are not focal points.

Another theme relates to the different understandings and priorities that may arise in communities in relation to such initiatives. Ballantyne, Fien and Packer (2001) discuss intergenerational influences on the provision of a school-based environmental education program. Whitehouse (2001) and Whitehouse and Evans (2010) focus on community tension around the notion of being a *greenie* in particular regional areas. Whitehouse's (2001) paper explores the ways in which this plays out for students in regional schools that have developed environmental education programs, and the resistance they encountered from peers, family members and the local community.

Similarly, Whitehouse and Evan (2010) frame *greenie* as a cultural discourse with the potential to impede the implementation of sustainability activities in schools. They explore the ways in which teachers and principals in four schools in regional NSW often reject this label when negotiating the discourse. O'Donoghue's (2003) analysis draws on an historical investigation of the ways in which Indigenous environmental knowledge has been marginalised in scientific institutions in eastern southern Africa. Focusing on a particular case, he outlines some of the techniques by which Indigenous perspectives have been undermined or appropriated over a long period of time.

Possible points of contention at a more ideological level and in relation to the views of particular perspectives have also been identified in the literature. Salter, Venville and Longnecker (2011) investigated sustainability activities in a particular school and reported that there was general tension "between the school's sustainability focus, its prestige as an elite private school and a 'lucky country' mentality" (p. 149). They argued that:

> *For many Australians "the lucky country" has become a celebrated phrase used to describe Australia's bountiful natural resources, weather, lifestyle, history, and distance from problems elsewhere in the world. … For environmental educators in Western Australia this relaxed mentality combined with economic reliance on the mining and resources industry is an obstacle to discussing the implications of climate change and encouraging uptake of environmentally responsible behaviours*. (p. 149)

Smith and Koernicke's (2004) work posits that there is tension between sustainability and individual development rights or local lifestyles. They advocate for partnerships between community and government for sustainable development initiatives, although they suggest that genuine partnering is rare as communities are potentially undermined by a failure of

governments to provide critical information. Lloyd and Norrie (2004) attend to community tensions related to environmental activities, by exploring inconsistencies in the input of Indigenous Australians in consultation processes, although this does not directly refer to a particular education program. Redmond and Walker (2009) also shift the focus from schools by exploring the perceptions of small business owners, suggesting that there have been insufficient attempts to provide environmental education for this group and offering suggestions for the design of such programs in future.

Somerville and Rennie's (2012) analysis of the ways in which new teachers working in a disadvantaged regional area in Australia learn from the places and communities in which they teach comes closer to addressing the tensions bound up with the concept of community, although it does not directly address environmental education. Somerville and Rennie suggest that teachers hold superficial views of communities "through commonly circulating categories of school-community relationships" (p. 193). They perceive a community as either a "cosy", comfortable place or a place of deficit (p. 193). They argue that effort ought to be expended during teachers' pre-service education and first few years of service, to arrest the development of such perceptions before they become entrenched.

Pat Thomson (2006) focuses on four initiatives that were part of the 20 partnerships between Tasmanian schools and communities that were funded by the State Department of Education in 2002. She situates these within the broad trend of governments responding to concerns about the devaluation of communities through appeals to local concerns, manifest in community-based activities in which schools are positioned as sites of action (p. 82). In different ways, these partnerships were related to enduring community tensions related to Tasmania's economic, social and environmental health, even though not all involved direct engagement with environmental issues.

One program took place in a region deeply divided by industrial interests and from which many students migrated to the mainland after graduation. The focus was on fostering relationships between "the school's most unsuccessful and 'difficult' [male] students" (Thomson, 2006, p. 85) and members of the community. This was done through collaborative maintenance of facilities for the town's annual agricultural show and, later, efforts to promote the show. While this program did not directly involve environmental educational practices or community dialogue about environmental issues, Thomson suggests that it shifted the boys' perception of the town from being "an old-fashioned out-of-touch place only good enough to leave" to one that motivated them "to value and work for the preservation of its agricultural heritage" (p. 88).

Another project took place in a town in which many of the students came from families whose main income was derived from agricultural work or small business. As the community generally held positive views towards environmental sustainability, there was significant tension between this community and others involved in mining in the region. The objective of the project was to regenerate a patch of native bush. Due to insufficient funding, a teacher appealed to local businesses, including the mine. The mine was highly supportive of the program, donating funds and inviting the students to meet environmental staff responsible for replanting mines with vegetation (Thomson, 2006, p. 86). Thomson suggests that through this experience "students met the miners and discovered that they were not quite the faceless environmental vandals they had imagined" (p. 87).

The approach

This project builds upon a number of Australian studies in rural education and sustainability that use the concepts of space and place to arrive at new understandings of existence and

educational, social, cultural and environmental concerns which are often intractable (Cormack, Green, & Reid, 2006; Green, 2012; Somerville & Green, 2012; Vanclay, Higgins, & Blackshaw, 2008). This education research literature shares links with recent policy and governance studies on the idea of localism. Whilst we recognise that localism is a contested term in political and academic circles (Evans, Marsh, & Stoker, 2013), our interest is in connecting policy work on localism (see e.g., Evans et al., 2013) to situated forms of education.

Examples of localism in action, such as delegated citizens' committees (Hendriks, Bolitho, & Foulkes, 2013), demonstrate that ongoing community engagement may have the capacity to develop collaborative relationships between governance and communities in the longer term. However, we also recognise some of the limitations and critiques of such approaches. Whilst localism relies on community involvement, questions remain concerning the equality of participation in decision-making processes, the lack of which can potentially lead to community division and conflict (Wilcock, 2013).

The area under consideration is the Murray-Darling Basin (MDB)**.** The MDB is the catchment for the Murray and Darling Rivers, covering a considerable region of inland south-eastern Australia, including much of inland NSW, southern Queensland, northern Victoria and eastern South Australia. The basin is an important environmental region, particularly for aquatic ecosystems, as well as being a significant region for food production, most notably through irrigated agriculture.

The Murray-Darling Basin Authority (MDBA) was established as an independent statutory body through the Water Act 2007. Through the MDBA, the Act legislated for a Murray-Darling Basin Plan ('the Plan') which provided, for the first time, basin-wide planning and decision-making where previously such management was undertaken through separate, state-based systems. The main aim of the Plan is to return water to the environment and thereby "deliver economic, social and environmental outcomes across the basin to ensure sustainable, productive communities and industries in the basin" (Select Committee on the MDBP, 2016, p. xiii). Following several years of development, the Plan was presented to the Australian federal parliament in November 2012.

Through the MDBP, the basin is one of the world's largest water markets, working through the trade and use of water allocation entitlements between various rights holders. State governments allocate water against entitlements and availability is determined by a range of factors, including rain flow, inflow and storage management. While states have responsibility for planning for water management and allocation, they must be consistent with the Plan.

To focus attention on this area, a place-based/place-conscious education offers a theoretically-informed educational model characterised by partnerships between students, teachers, schools, communities and local places, and capable of addressing the problematic nature of sustainability education (Gruenewald, 2003a, 2003b; Gruenewald & Smith, 2008). As a form of education, place-based learning is grounded in "resources, issues and values of the local community" and is designed to encourage school and community partnerships that incorporate environmental, ecological, cultural, social, economic and political perspectives in formal and informal ways (Powers, 2004, p. 17).

In formal schooling, this distinct form of educational practice links schools to place-intergenerational education through different approaches to learning and knowledge creation, challenging assumptions about the roles of educators and learners, where education actually takes place, and what the goals of education might be. Community partnerships are also seen as critical because "they recognize the value and importance of local knowledge of the community

involved in working to support longevity of sustainable education programs" (Somerville & Green, 2012, p. 72).

Methods

This paper presents a report on Phase One of the project, which identified the understandings of sustainability held by various community groups within the MDB. Purposive sampling was initially used to select community groups, members of which were then asked to complete an online survey or to forward the survey to related organisations or individuals following the principles of snowball sampling. The survey investigated their understanding of sustainability, its importance (both personally and to their organisation), attitudes to resource allocation, challenges they face in pursuing their understandings, and their suggestions for overcoming these challenges.

Importantly, the survey was directed to the individual in the organisation who was responsible for its sustainability initiatives. These broadly-defined community groups were chosen as proxies for community leadership. That is, we were concerned with understanding the perspectives of those who potentially shape community attitudes and have the resources and infrastructure to deliver sustainability initiatives. A broad-based community attitude survey is regarded as a separate and different task to what was undertaken here.

In this paper, we report on the 284 responses we obtained from community organisations. These included 96 community groups, 24 service clubs, 24 farming organisations, 11 commercial groups, and 129 other organisations (e.g., councils, other NGOs, volunteer groups). Both statistical and qualitative data are presented. The statistical data have been calculated using standard statistical techniques, while the qualitative aspects of the survey have been coded manually, following the principles of grounded theory (Roberts & Downes, 2015).

Findings

The survey responses obtained from the community organisations demonstrated that sustainability is of great significance to them. 91% of respondents (see Figure 1) ranked sustainability as "very important" or "important" on a seven point Likert-like scale (70% top rank and 21% second rank, SD = 0.84). Notably, though, this percentage dropped when respondents were asked the same question in relation to the organisation they represented. Here, only 56% stated that sustainability was very important to their organisation (rank 1), while 19% ranked it second on the same Likert-like scale. The overall spread of responses was greater (SD = 1.08). In Figure 1, the 7-point Likert-like scale has been collapsed to three categories to aid visual representation of these data.

It was evident that respondents had a much greater personal commitment to sustainability than they believed their organisations did. This suggests that these community organisations have a degree of policy failing in recognising and communicating the importance of a broadly-defined understanding of sustainability. We use the idea of "a broadly-defined understanding of sustainability" drawn from the evolving understandings of the Brundtland Report (World Commission on Environment and Development, 1987) that focus on the interactions between the economic, environmental, social and cultural dimensions of sustainability.

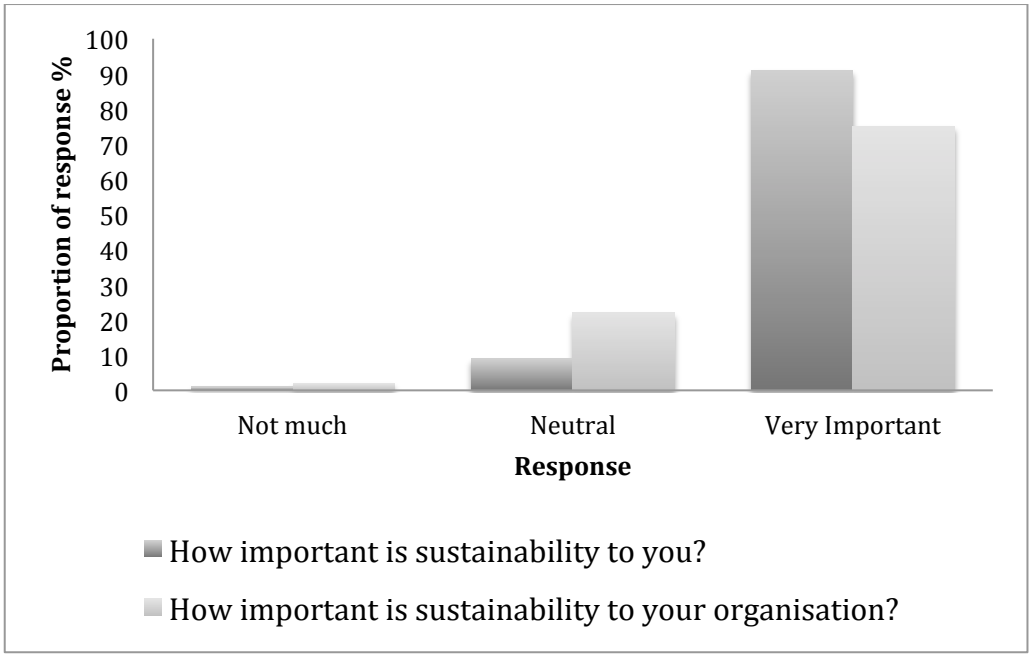

Figure 1. ***Responses to "How important is sustainability to you?" and "How important is sustainability to your organisation?"***

As the definitions of *sustainability* can be unclear and contested, an important component of this project was to uncover just what respondents meant by sustainability and what it meant for their organisation. These clearer understandings can then be used by policy makers and those implementing policies in local contexts to work with local meanings, rather than against them. In our data, the most significant category of response, which emerged in manual coding informed by a grounded theory approach, was best described as a positioning of sustainability as a "future oriented" concept. While including the traditional view of maintaining the environment and resources for future generations, there was a semantic orientation towards the future.

This is distinct from the second category, that of the "integrated approach" and the third category of "environmental maintenance". Responses in the second category emphasised the interconnected nature of the environment, the economy, people and communities, whereas the third category focussed on environmental maintenance – both without time references. Notably, considering the site of the survey and nature of respondents, farm-specific perspectives of sustainability fell outside of these first three categories. Positively, this suggests that farming practices may be considered part of the broader environment as opposed to a narrower, farm-specific or land perspective. Notably, in relation to environmental concerns, it was evident that respondents were concerned with improving the environment, not just maintaining it in its present state. Other categories identified included sustainability as environmental maintenance, agri-business related and the traditional triple bottom line definitions.

Contrasting respondents' personal meaning of sustainability with that of their organisations showed some differences in understandings of sustainability. When referring to organisations, "survival" was the most prevalent meaning, in terms of the "survival of the organisation" and "community survival". It is evident that community organisations clearly see themselves as having an important role in maintaining a sense of community. A meaning aligning with the integrated approach outlined above followed this idea of survival; that is, the connection of the environment, social, economic and cultural elements that make up all facets of their community.

Interestingly, "education" was the third-most popular meaning of sustainability used in reference to community organisations. The ideas here referred to promoting an awareness of sustainability through community and school education. This suggests that community organisations clearly saw community education as an important aspect of their role, as well as a way to meet the challenges of sustainability. For this project, the reference to education raises questions about the meanings used in communities and their congruence to meanings used in larger state and national scales. Other categories of responses that were noted related to personal and/or business actions to minimise environmental impact and the maintenance of resources for future generations. However, these were low in numbers.

Respondents were asked to rank the importance of five areas of sustainability: social, cultural, environmental, economic and other. Given that areas were ranked, the results are presented as the mean rank for each area and their standard deviations. The areas ranked in order of significance were "environmental" (mean = 3.16, SD = 1.05), "economic" (mean = 2.29, SD = 1.21) "social" (mean = 2.48, SD = 0.81), "cultural" (mean = 1.56, SD = 0.81) and "other" (mean = 0.21, SD = 0.81). Notably, while "environmental" is clearly ranked first and "cultural" last, the "economic" and "social" dimensions are virtually inseparable in rank, suggesting that they were regarded overall as being equally important.

The standard deviations show that the areas of "social" and "cultural" were more consistently ranked by respondents, in this case second and last respectively. The areas of "environmental" and "economic", on the other hand, were less consistently ranked. For example, while "environmental" was predominantly ranked first, it was sometimes ranked lower, or even last. The greater variance observed in the rankings of the "environmental" and "economic" aspects suggests that there was less agreement about their importance than the "social" and "cultural" aspects. Specifically, the "social" was consistently considered as not the most important aspect, nor was "cultural".

Next, open-text comments were obtained to reinforce the interconnected understandings of sustainability used by respondents. Here, an intertwined "future orientated" meaning was evident that included the *social*, *economic* and *environmental* aspects. For example, "to manage our natural resources to ensure our community survives, a future for the kids, jobs but not damage the environment".

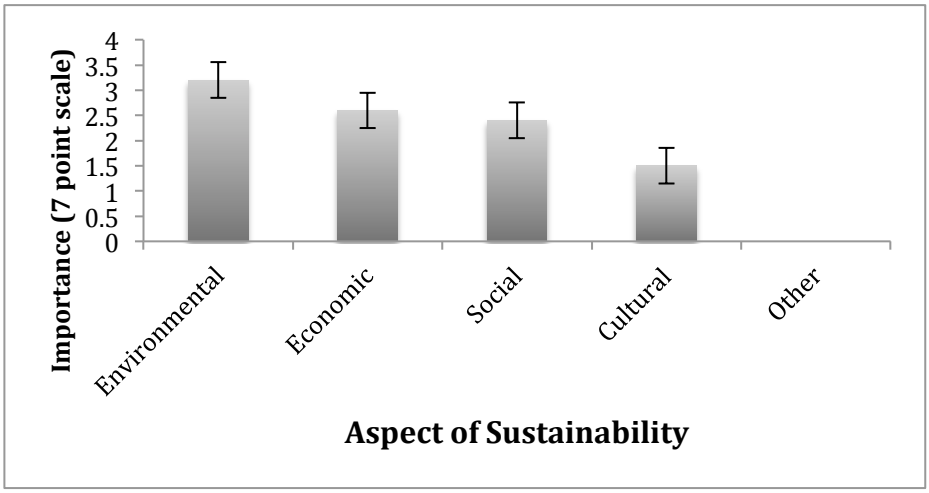

Figure 2: Responses to the question "*The importance of each area of sustainability in achieving your organisation's sustainability goals*" (*mean* rank *with +/- 2 SE)*

This paper does not intend to define *sustainability*, and the results illustrate that it has multiple meanings within community organisations. At the community level, respondents acknowledged a view of sustainability that identifies the interconnections between its economic, environmental, social needs and cultural dimensions. This can inform public policy relating to communities and it suggests that there are multiple ways to enter into sustainability initiatives that may avoid conflict. Notably, however, the results suggest that organisational culture itself may need to be addressed, as respondents indicated that sustainability is less of a priority for their organisation than it is for them personally.

Achieving sustainability

The next section of the survey related to what organisations were doing in relation to sustainability, barriers to their work, resource allocation, and their suggested solutions. The aim of this section was to establish what programs, if any, organisations were undertaking in relation to sustainability and, if they were, what the nature of the program was. Furthermore, this section was intended to identify the challenges that the organisations faced, and what they saw as being solutions to those challenges.

In relation to an open question about what activities the respondents' organisations were undertaking in relation to sustainability, the following categories emerged in the coding. The main category related to "environmental" programs, followed by "education and public awareness" initiatives, with "farm practices" a distant third, closely followed by targeted "reduction of resource use" programs. The first two categories accounted for the majority of responses; however, given the perspective of this project, it is worth noting that "cultural/social" programs and "lobbying" both received minor mentions. It was evident in these responses that, while community organisations appeared to be using integrated meanings of sustainability, their practical work was orientated to specific environmental projects and awareness campaigns. This may either suggest that there is a difficulty for such organisations in developing and implementing programs that address the economic and social dimensions, or reveal an environmental tendency towards achieving the social and economic dimensions.

Turning to perspectives on the percentage of resources to be allocated to each area of sustainability, "environment" accounted for just over a third (34%, SD = 18.55), followed by "economic" (26%, SD = 15.88), "social" (21%, SD = 10.66) and "cultural" (15%, SD = 9.09). Again, the percentages varied more for the categories of "environment" and "economic", indicating a greater range of attitudes about how much of the resource allocation they should attract, from 100% to none at all. Notably, both "environmental" and "economic" categories received responses suggesting that 100% of available resources should be allocated to them, whereas no respondent suggested an allocation greater than 60% for "social" or 40% for "cultural".

Looking specifically at the challenges organisations faced in achieving their sustainability goals, it is evident that "financial" and "human" resource issues were the more pressing. Table 1 summarises the responses. In reading Table 1 (and Table 2), note that respondents were asked to give at least three priorities, with one being the highest. The results here are presented as a rank of the frequency of responses per category within each priority. As such, it may be that the first rank in priority two is more significant than the fourth rank in priority one.

Rank	Priority 1	Priority 2	Priority 3
1	Financial *(funding & operating costs)*	Financial *(funding & operating costs)*	Organisational *(culture, change, competing values within)*
2	Human resources *(small numbers, ageing members)*	Attitudes & understandings *(lack of understanding of the issue, lack of interest)*	Education & awareness *(not enough knowledge about issues)*
3	Attitudes *(prevailing anti-sustainability views)*	Organisational issues *(leadership, viability of organisation itself)*	Human resources *(people leaving areas)*
4	Government *(mainly local government policy & priorities)*	Human resources *(difficulty attracting members, volunteers)*	Government *(policy & regulation)*

Table 1: *Challenges facing organisations in achieving sustainability goals*

What is notable from these results is the persistent concern about a lack of funding to both maintain the organisation itself and carry out the activities related to sustainability. Human resources, in terms of members and volunteers with necessary skills, are also significant. The human resource concern relates to the organisational concerns for the viability of the organisation itself, which in turn seems to be influenced by internal inconsistencies about directions and priorities.

A general sense of a lack of understanding in the broader community about the issues, coupled with a perspective that there is an anti-sustainability attitude prevailing, as revealed by the responses relating to "education about the environmental issues", also comes through as a persistent concern for respondents. Finally, some mention of "government" enters as a low priority in responses but, notably, it is considered an obstacle in the form of policy and regulation.

Rank	Priority 1	Priority 2	Priority 3
1	Education & awareness *(educate community & in schools)*	Education *(educate the community about the issues and approaches)*	Financial *(grants too hard, more of, better use, promote financial benefits)*
2	Financial *(funding, financial management and fundraising)*	Financial *(greater resources)*	Education *(school, community, new qualifications to reflect what is needed)*
3	Government *(commitment, funding, qualified people)*	Government *(lobbying, policy, less interference)*	Government *(need politicians who understand)*
4	Too hard	Landholders & businesses *(support & work with them)*	Collaboration *(more community involvement less individualistic)*

Table 2: *Suggestions for addressing the challenges outlined in Table 1*

Table 2, on the other hand, summarises respondents' perspectives on their preferred solutions to addressing the challenges outlined in Table 1. Rather than suggest that increased "funding" was the preferred solution, respondents instead commented more frequently about "education" as their first priority. This is consistently significant throughout the second and third priorities. "Financial" issues were consistently seen as a priority as well, although not only in terms of more money, but also in terms of financial management and improved grant application processes.

Here the idea of "government" as both an obstacle and a necessary facilitator of change came through in the survey. For while at times "government" was often noted as an obstacle, it was also discussed in relation to strategies to achieve meaningful change. Examples of this include respondents suggesting that government needed more personnel who were qualified or knowledgeable in the area of sustainability, and needed to maintain more consistent policies. Government was also seen as a decision-making body to be lobbied. This is interesting, as lobbying came in as a lower-ranked approach that organisations were taking in relation to sustainability. Conceivably, then, it may be linked to accessing funding and programs.

As a response, "lobbying" is distinctly different from "education". In the survey responses, "education" tended to be used to refer to developing broad community understandings of sustainability issues and promoting necessary actions. In this way it was seen as a form of public communication and not as something solely related to the work of schools. "Lobbying" was perceived as a political action; however, it would seem that respondents felt that a better educated community may implicitly exert influence on government to act in relation to sustainability in a way that is more effective that overt lobbying. Finally, it is worth highlighting another perception of education that was evident from the responses—that it can provide new skills relevant to a changing environment.

Conclusion

Given the pivotal role of water in Australia's social wellbeing and economic wealth, considering the different perceptions of sustainability seems especially important in rural contexts dominated by water management and sustainability concerns. If sustainability education aims to contribute to building individual and shared responsibility for water management in the MDB and a sense of community for rising to the challenges of sustainability, considering the complexity of the meanings and values attached to sustainability has implications for shaping collective action in rural-regional areas.

Scope exists to better acknowledge the tensions and contradictions between and within MDB communities and in sustainability education more generally. Our survey data suggest there is a dynamic field of community and non-governmental organisations operating in many rural and regional communities. Such organisations contribute in both formal and informal ways to an active community dialogue on a range of sustainability-related concerns. Local environmental centres, councils, media, business leaders, farmers and general public discourse combine to inform and construct community meanings and values in relation to sustainability at the local level in the MDB region, and at the national level, not only in relation to water management, but also to the kinds of "water cultures" (Bijker, 2012, p. 624) available to young people, their families and communities.

This is not to suggest that schools should only reflect the attitudes of their communities; indeed there is a legitimate role for schools in developing new understandings. Instead, we are arguing that, in order to develop new understandings, education programs can work to develop shared understandings in and across places. We would contend that the tendency of schooling to disregard or downplay rural worldviews and understandings (Roberts, 2014) can further divide communities and work against achieving sustainable futures, by discounting the local understandings that students are likely to be bringing with them.

Rather than presenting sustainability as a concept to be learnt, the results here show that there are rich perspectives and a range of existing approaches for schools to work with in addressing sustainability in the curriculum. Such an approach would recognise that there are many pathways

to sustainability initiatives that potentially avoid tensions associated with myopic views. Using these existing understandings potentially connects school knowledge on sustainability with knowledge significant to local communities. In so doing, local knowledge becomes central to change and an important building block in initiatives designed to achieve sustainable local futures.

More broadly, such considerations may also add some valuable insight into the role education can play in both the instrumental and normative dimensions of community. Such interventions potentially raise both political and educational questions without reducing one to the other. As educational philosopher Gert Biesta (2012) writes in relation to a public pedagogy:

> *Such interventions not only raise political questions about what it means for spaces and places to be public, which is particularly important against the backdrop concerns about the decline of the public sphere and the end of public space … They also raise questions about what it means to contribute to the reinvigoration of the public quality of space and places through such interventions*. (p. 684)

Such an approach to sustainability education would not only begin to recognise the ways in which landscapes, natural resources, places and spaces are comprised of power relations that cannot simply be managed for sustainable use, but it would also "spark a new public into life" (Whatmore & Landström, 2011, p. 604) and take us in the direction of a "decentred" sustainability education focussed on "experiments in what sustainability can mean in different contexts" (Dryzek, 2013, p. 235).

The multifaceted meaning of sustainability evident in our survey suggests that rural-regional communities have diverse conceptualisations of nature and its value, nature and its relationship to economic growth, the limits of environmental resources, and the role of green technology, to name just a few concepts. By appreciating the plurality of perspectives, schools and community education groups can work toward developing new approaches to engaging communities and schools in ways that potentially foster dialogue both between and across perspectives in local contexts and ask the question of "whose knowledge is at stake" (Whatmore & Landström, 2011, p. 604) in relation to sustainability in rural-regional communities. As the respondents reported, this problem-solving can begin in schools and in community education. To facilitate such necessary dialogue, this study provides scope for teachers in schools, along with community organisations, to consider working from a public-focussed, place-based approach to sustainability, in order to not only connect with their communities, but to also consider what it might take to develop a sense of community for the collective challenges of sustainability in rural-regional areas.

Acknowledgement

This research was conducted with the financial support of the Murray-Darling Basin Authority, Australia. In addition to the authors, the project team included Emeritus Professor Bill Green and Dr Jo Caffery.

References

Armstrong, P., Sharpley, B., & Malcolm, S. (2004). The waste wise schools program: Evidence of educational, environmental, social and economic outcomes at the school and community level. *Australian Journal of Environmental Education*, *20*(2), 1–11. doi:10.1017/S0814062600002159

Ballantyne, R., Fien, J., & Packer, J. (2001). Intergenerational influence in environmental education: A quantitative analysis. *Australian Journal of Environmental Education*, *17*, 1–7. doi: 10.1017/S0814062600002378
Biesta, G. (2012). Becoming public: Public pedagogy, citizenship and the public sphere. *Social and Cultural Geography, 13*(7), 683–697.
Bijker, W. (2012). Do we live in water cultures? A methodological commentary. *Social Studies of Science, 42*(4), 624–627.
Black, A. W. (2004). The quest for sustainable, healthy communities. *Australian Journal of Environmental Education*, *20*(1), 33–44. doi: 10.1017/S0814062600002287
Blair, M. (2008). Community environmental education as a model for effective environmental programmes. *Australian Journal of Environmental Education*, *24*, 45–53. doi:10.1017/S0814062600000574
Cocklin, C., & Dibden, J. (2005). Introduction. In C. Cocklin & J. Dibden (Eds.), *Sustainability and change in rural Australia* (pp. 1–18). Sydney, NSW: University of NSW Press.
Collier, G., & Smith, P. (2009). Beyond lip service: A council approach to planning for behaviour change. *Australian Journal of Environmental Education*, *25*, 129–138. doi:10.1017/S081406260000046X
Corbett, M. (2007). *Learning to leave: The irony of schooling in a coastal community.* Halifax, Canada: Fernwood Publishing.
Corbett, M. (2014). The ambivalence of community: A critical analysis of rural education's oldest trope. *Peabody Journal of Education, 89*(5), 603–618. doi: 10.1080/0161959X.2014.956532
Corkery, L. (2004). Community gardens as a platform for education for sustainability. *Australian Journal of Environmental Education*, *20*(1), 69–75. doi: 10.1017/S0814062600002317
Cormack, P., Green, B., & Reid, J.-A. (2008). River literacies: Discursive constructions of place and environment in children's writing about the Murray-Darling Basin. In F. Vanclay, J. Malpas, M. Higgins, & A. Blackshaw (Eds.), *Making sense of place: Exploring concepts and expressions of place through different senses and lenses* (pp. 57–76). Canberra, ACT: National Museum of Australia.
Davila, F., & Dyball, R. (2015). Transforming food systems through food sovereignty: An Australian urban context. *Australian Journal of Environmental Education*, *31*(1), 34–45. doi: 10.1017/aee.2015.14
Dryzek, J. (2013). *The politics of the earth: Environmental discourses* (3rd ed.). Oxford, UK: Oxford University Press.
Evans, M., & Pratchett, L. (2013). The localism gap – the CLEAR failings of the official consultation in the Murray-Darling Basin. *Policy Studies, 34*(5), 541–558. doi: 10.1080/01442872.2013.862448
Evans, M., Marsh, D., & Stoker, G. (2013). Understanding localism. *Policy Studies, 34*(4), 401–407. doi: 10.1080/01442872.2013.822699
Flowers, R., & Chodkiewicz, A. (2009). Local communities and schools tackling sustainability and climate change. *Australian Journal of Environmental Education*, *25*, 71–81. doi: 10.1017/S0814062600000410
Green, M. (2008). From wilderness to the educational heart: A Tasmanian story of place. *Australian Journal of Environmental Education*, *24*, 35–43. doi: 10.1017/S0814062600000562
Green, M. (2012). Place, sustainability and literacy in environmental education: Frameworks for teaching and learning. *Review of International Geographical Education Online, 2*(3), 327–346.
Gruenewald, D. (2003a). The best of both worlds: A critical pedagogy of place. *Educational Researcher, 32*(4), 3–12.
Gruenewald, D. (2003b). Foundations of place: A multidisciplinary framework for place-conscious education. *American Educational Research Journal, 40*(3), 619–654.

Gruenewald, D., & Smith, G. (Eds.). (2008). *Place-based education in the global age*. New York, NY: Lawrence Erlbaum Associates.
Harris, C. E., & Barter, B. G. (2015). Pedagogies that explore food practices: Resetting the table for improved eco-justice. *Australian Journal of Environmental Education*, *31*(1), 12–33. doi: 10.1017/aee.2015.12
Hendriks, C. M., Bolitho, A., & Foulkes, C. (2013). Localism and the paradox of devolution: Delegated citizen committees in Victoria, Australia. *Policy Studies, 34*(5–6), 575–591. doi: 10.1080/01442872.2013.862450.
Jickling, B., & Wals, A. E. (2008). Globalization and environmental education: Looking beyond sustainable development. *Journal of Curriculum Studies*, *40*(1), 1–21.
Lloyd, D., & Norrie, F. (2004). Identifying training needs to improve Indigenous community representatives input into environmental resource management consultative processes: A case study of the Bundjalung Nation. *Australian Journal of Environmental Education*, *20*(1), 101–113. doi: 10.1017/S0814062600002342
McLoughlin, L. C. (2004). Is sustainability a breakfast cereal? Public program based research into community understandings of sustainability. *Australian Journal of Environmental Education*, *20*(1), 115–127. doi: 10.1017/S0814062600002354
Mitchell, M., Curtis, A., Davidson, P. (2008). Evaluating the process of triple bottom line reporting: Increasing the potential for change. *Local Environment, 13*(2), 67–80.
Mollinga, P. (2010). The material conditions of a polarized discourse: Clamours and silences in critical analysis of agricultural water use in India. *Journal of Agrarian Change*, *10*(3), 411–436.
O'Donoghue, R. (2003). Indigenous knowledge: Towards learning materials and methodologies that respond to social processes of marginalisation and appropriation in Eastern Southern Africa. *Australian Journal of Environmental Education*, *19*, 57–67. doi: 10.1017/S0814062600001476
Powers, A. L. (2004). An evaluation of four place-based education programs. *Journal of Environmental Education, 35*(4), 17–32.
Redmond, J., & Walker, E. (2009). Environmental education in small business: The owner-manager's perspective. *Australian Journal of Environmental Education*, *25*, 117–128. doi: 10.1017/S0814062600000458
Reid, J-A., Green, B., Cooper, M., Hasting, W., Lock, G., & White, S. (2010). Regenerating rural social space? Teacher education for rural-regional sustainability. *Australian Journal of Education, 54*(3), 262–267.
Roberts, P. (2014). A curriculum for the country: The absence of the rural in a national curriculum. *Curriculum Perspectives, 34*(1), 51–60.
Roberts, P., & Downes, N. (2016). Conflicting messages: Sustainability and education for rural-regional sustainability. *Rural Society, 25*(1), 15–36.
Roberts, P., & Downes, N. (2015). *Community and school understandings of sustainability: Survey summary*. Canberra, ACT: University of Canberra.
Roberts, P., & Green, B. (2013). Researching rural place: On social justice and rural education. *Qualitative Inquiry, 19*(10), 765–774.
Salter, Z., Venville, G., & Longnecker, N. (2011). An Australian story: School sustainability education in the lucky country. *Australian Journal of Environmental Education*, *27*(1), 149–159. doi: 10.1017/S0814062600000148
Select Committee on the Murray-Darling Basin Plan. (2016). *Refreshing the Plan*. Canberra, ACT: Senate Printing Unit.
Smith, G., & Koernicke, I. (2004). Local environmental risk assessment as a sustainability education tool. *Australian Journal of Environmental Education*, *20*(1), 129–136. doi: 10.1017/S0814062600002366
Somerville, M., & Green, M. (2012). Mapping sustainability initiatives across a region: An

innovative survey approach. *Australian Journal of Environmental Education, 28*(2), 65–77. doi: 10.1017/aee.2013.1

Somerville, M., & Rennie, J. (2012). Mobilising community? Place, identity formation and new teachers' learning. *Discourse: Studies in the Cultural Politics of Education*, *33*(2), 193–206. doi: 10.1080/01596306.2012.666075

Strange, T., & Bayley, A. (2008). *Sustainable development: Linking economy, society and environment*. Paris: Organisation for Economic Cooperation and Development. Retrieved from http://www.oecd-ilibrary.org/docserver/download/0108121e.pdf?expires=1403051535&id=id&accname=guest&checksum=DD95A5E774B80AFF23315A1FF719663A

Tangen, D., & Fielding-Barnsley, R. (2007). Environmental education in a culturally diverse school. *Australian Journal of Environmental Education*, *23*, 23–30. doi: 10.1017/S0814062600000689

Thomson, P. (2006). Miners, diggers, ferals and show-men: School-community projects that affirm and unsettle identities and place? *British Journal of Sociology of Education*, *27*(1), 81–96.

Vanclay, F., Higgins, M., & Blackshaw, A. (2008). *Making sense of place: Exploring concepts and expressions of place through different senses and lenses*. Canberra, ACT: National Museum of Australia Press.

Weir, J. (2009). *Murray River country: An ecological dialogue with traditional owners*. Canberra, ACT: Aboriginal Studies Press.

Western, L., & Pilgrim, A. (2001). Learning as we go: Catchment management in the urban rural fringe. *Australian Journal of Environmental Education*, *17*, 143–148. doi: 10.1017/S0814062600002524

Whatmore, S. J., & Landström, C. (2011). Flood apprentices: An exercise in making things public. *Economy and Society, 40*(4), 582–610.

Whelan, J. (2005). Popular education for the environment: Building interest in the educational dimension of social action. *Australian Journal of Environmental Education*, *21*, 117–128. doi: 10.1017/S0814062600001002

Whitehouse, H. (2001). "Not greenies" at school: Investigating the discourses of environmental activism in regional Australia. *Australian Journal of Environmental Education*, *17*, 71–76. doi: 10.1017/S0814062600002469

Whitehouse, H., & Evans, N. (2010). "I am not a greenie, but": Negotiating a cultural discourse. *Australian Journal of Environmental Education*, *26*, 19–31. doi: 10.1017/S081406260000080X

Wilcock, D. A. (2013). From blank spaces to flows of life: Transforming community engagement in environmental decision-making and its implications for localism. *Policy Studies, 34*(4), 455–473. doi:10.1080/01442872.2013.822703

World Commission on Environment and Development [Brundtland Commission]. (1987). *Report of the World Commission on Environment and Development: Our common future*. Retrieved from http://www.un-documents.net/wced-ocf.htm