

Environmental Education in Small Business: The Owner-Manager's Perspective

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Abstract

Traditionally, environmental education has been aimed at the community or in primary schools and governmental pressure to reduce environmental damage has focussed on large businesses. More recently, the role and importance of small business and how to engage them in the environmental debate has come under scrutiny. Researchers have identified education as one method of increasing the understanding of small business owner-managers' role and knowledge of practices that, when implemented, will reduce the negative impacts of their businesses. However, there is little attention given in the literature to the perspective of the small business owner-manager and environmental education. This research was conducted to begin to address this gap. Research results confirm that there is limited environmental education for small businesses and that there is a disconnect in meeting the needs of such a disparate group. Six elements were identified by the small business owner-managers in the design of environmental education for them: use of plain language, provision of best practice examples, industry specific information, solutions for immediate improvement, practical content and use of trusted sources to deliver the program.

Introduction

Environmental education began in the early 1960s as a response to concern about environmental degradation and focussed on creating public awareness (Gough, 1997). By 1966, the focus turned to the next generation, with emphasis placed on school and university curriculum that introduced ecological content. Environmental education took a new direction in the 1980s and looked toward sustainable development, with the term now widely used in the business and industry sectors.

Over time, many large businesses have taken steps to reduce pollution and environmentally harmful work practices, whereas those in small businesses continue to be generally unaware of the impact of the business on the environment or the need to address environmental issues (Melton & Tinsley, 1999). Williamson and Lynch-Wood (2001) suggest that some small businesses consider themselves to have an awareness of environmental issues, however, other research has shown that many small businesses consider the environment to be a "peripheral" rather than core business issue and do not perceive that they have a significant impact on the environment (Peters & Turner,

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2004; Redmond, Walker, & Wang, 2008). This is a serious issue as it indicates that small businesses are not yet engaged in the environmental debate, despite all the global political attention environmental issues are receiving. It would appear that small businesses are continuing to “fly under the radar” when it comes to being actively engaged in changing environmental behaviour (Walker, Redmond, & Goeft, 2007).

Jenkins (2004 cited in Roberts, Lawson, & Nicholls, 2006) suggested that while small businesses are often viewed as the problem because they fail to demonstrate corporate social responsibility, it may be that the difficulty lies in the failure of governments to actively engage with small businesses. The truth may lie somewhere in between. It could be that small businesses do not understand their role in the environmental agenda as Madden and Scaife (2006, p. 5) found: “[small businesses] generally lacked an overall vision or purpose for their community involvement and what it could achieve for their business”. If this is the case, education has a vital role to play.

Education as a Driver of Small Business Environmental Behaviour

Early approaches to inspiring environmentally friendly practices in small businesses involved the use of shock tactics (e.g., talk of the devastating effects of environmental disasters) to highlight the impact that society was having on the natural world, however this strategy has proven to be relatively ineffective (Kuhntz, 2007). Therefore, to achieve a more appropriate response, particularly from small business, other more direct interventions are being targeted.

A range of studies note that considerable effort has been made to determine the best ways to engage small businesses in environmental management (Condon, 2004; Revell & Rutherford, 2003). Although few programs exist (Thomas, Jennings, & Lloyd, 2008), researchers none-the-less encourage the use of education as a key strategy to engage small business in environmental management practices (Condon, 2004; Hilton, 2001; Katos & Nathan, 2004; Tilbury, Adams, & Keogh, 2005; Tilley, 1999). For example, Tilbury, et al. (2005, p. 8) argue that:

Sustainability is not a destination for business organisations to reach, but an ongoing learning process. Educators need to build the capacity of business and industry to address sustainability issues at a more systemic level, and to collaborate with multiple stakeholders for their resolution.

A recent study has shown that small business owner-managers also see education as the best strategy to change environmental behaviour within the sector (Walker, Redmond, & Goeft, 2007). Paradoxically, research has also found that small businesses owner-managers are usually wary of formal education and training (Billett, 2001; Matlay, 2000), are less likely to train staff than large businesses (Bryan, 2006), and view training of any sort as a cost and not an investment (Webster, Walker, & Brown, 2005). Small business owner-managers face time and cost issues as well as the preference for applied, just-in-time and experiential learning, as they tend to use a reactive management style that is focussed on day-to-day operational matters (Dawe & Nguyen, 2007; Webster, Walker, & Barrett, 2005; Webster, Walker, & Brown, 2005). Moreover, environmental education aimed at small businesses has been criticised for lacking specificity, not using appropriate language, and being too difficult to access (The National Centre for Business and Sustainability, 2006; Tilbury et al., 2005). Therefore, it is important to understand the types of and ways in which environmental education could be effective for small business owner-managers and their staff.

Small Business and Environmental Engagement

Small business' engagement in environmental management practices is vital (Leutkenhorst, 2004; Naffziger, Almed, & Montagno 2003) as it is currently estimated that small businesses are contributing up to 70% of global pollution (Hillary, 2000; Stokes, Chen, & Revell, 2007). Despite this, many small businesses have not engaged (Bradford & Fraser, 2008; Gadenne, Kennedy, & McKeiver, 2008), or only do so to the extent of compliance (Revell & Blackburn, 2004). For example, only 25% of Australian companies have attempted to save water, and only 10% know how much greenhouse gas they are producing (The Australian Industry Group, 2007). Part of the reason for this lack of engagement is that they have low levels of "eco-literacy" (Gerstenfeld & Roberts, 2000).

These reasons cannot be ignored given the vital economic and social role small businesses play. For example, in Australia 96% of all businesses are small businesses, the definition of small business being a business that employs 20 or fewer staff (Australian Bureau of Statistics, 2005). Small businesses also account for 47% of private sector non-agricultural employment (Australian Bureau of Statistics, 2005) and cover all industry sectors. The small business sector, however, forms a disparate group who do not think in the same way and often work in isolation. This isolation makes it easier for them to ignore the individual impact they may be having on the environment, yet it is estimated that they are collectively contributing a considerable ecological footprint (Hillary, 2000; Stokes, et al., 2007; Walker, Redmond, & Goeft, 2007).

A number of strategies found to be effective in reaching and influencing small businesses have been identified (Condon, 2004; Roberts et al., 2006). These include: on-site visits, face-to-face advice, networking with those valued and trusted, and the establishment of meaningful relationships between academics and the small business to enable collaborative work toward a common goal.

While the number of studies on environmental management in small business is increasing (Aragón-Correa, Hurtade-Torres, Sharma, & Garcia-Morales, 2008; Bradford & Fraser, 2008; Gadenne, et al., 2008; Mir, 2008; Redmond et al., 2008), little is known about their business-specific environmental education needs. Indeed, the Australian Federal Government has recommended that research should be undertaken to "encourage corporate organisations to engage in dialogue with stakeholders to determine their own learning for sustainability needs" (Tilbury, et al., 2005). By obtaining small business owner-managers' perspectives on the environmental education needs in small business, the current study contributes towards an improved understanding the most suitable design and delivery of environmental education programs for this sector.

Approaches to Environmental Education

There are varying points of view about the most appropriate way to deliver environmental education (i.e., evolutionary/cognitive/motivational approach (Kaplan, 2000); mixed method approaches (Fien, 2000); participative problem solving approach (Walker, 1995); positivist, expert controlled awareness raising (McKenzie-Mohr & Smith, 1999); and/or transdisciplinary approaches (Tilbury et al., 2005)). In the small business environmental literature a mixed method approach (e.g., combined use of financial incentives/disincentives, compulsory regulation, education and voluntary initiatives) has been suggested as effective (Parker, Redmond, & Simpson, 2009). However, a problem-solving approach (Walker, 1995) seems to have some general applicability here in that it suggests that the educator works with business personnel to address sustainability issues that they want to address and then builds their capacity to take action. The problem-solving approach appears to cater for three important factors in

engaging small business owner-managers in education. First, it allows for the diversity of small business needs by working directly with business personnel. Second, it offers practical advice and information, which is of importance to resource poor small business owner-managers. Finally, it incorporates an element of “handholding” that small business research has indicated is necessary to achieve engagement by small business in environmental management (Friedman & Miles, 2002; Yap & Thong, 1997). In this paper we attempt to identify what small business owner-managers would like their environmental education to look like rather than telling them what they need to do.

Method

The aim of this study was to identify small business owner-managers environmental education needs. Three research questions were developed:

1. What environmental knowledge do small business owner-manager’s possess?
2. What environmental training do small businesses currently need?
3. What are the elements that should be included in small business training?

A quantitative research design was used to survey the small business owner-managers. The use of surveys is valid when conducting exploratory investigations and when seeking to elicit meaningful, intra-comparable information (Fowler, 1995). The main database for the survey was derived from the Australia Post delivery point methodology which allowed access to the mail boxes of small businesses throughout Western Australia. A second database was also developed from a State-based telephone business directory. These businesses were contacted by telephone prior to posting the survey to ask if they would participate.

The survey collected data on the characteristics of the business (e.g., number of employees, type of business) the owner-manager (e.g., age, education, gender), and small business owner-managers’ current environmental management knowledge and training in key topic areas that are relevant to businesses of this size (e.g., air pollution control, environmental law, waste and recycling), specific needs for environmental training (e.g., energy efficiency, noise pollution, wastewater management), and individual teaching and learning strategies to include in environmental management training (e.g., best practice examples, case studies, guest speakers).

A purposive sample of owner-managers of small businesses was established using an unaddressed mail method. Postal surveys were sent by mail to 2100 small businesses. A poor initial survey response rate of 3% was achieved using this method (retail $n=24$, service $n=17$, manufacturing $n=6$, construction $n=4$, food $n=4$, other $n=7$; total $n=62$). Therefore, an additional 100 surveys were sent to businesses from the printing and motor trades that had agreed by phone to complete the surveys. These industries were chosen as both have to comply with environmental management regulations. Although the response rate was improved ($n=16$ printing and $n=13$ mechanical, $rr =29%$) the underlying message is that engaging small businesses on the environment is a very difficult task, even when their input is agreed. This poor response rate highlights again that small business owner-managers are not engaged in the environmental debate and a convincing business case has not been developed for them. The marketing maxim “what’s in it for me” applies here. However, the total number of surveys did provide sufficient numerical strength ($n =91$) for analysis given due caution in the interpretation of the data.

Data were analysed using quantitative techniques in SPSS (v15) and following the tenets of major statistical theorists (Nunnally & Bernstein, 1994; Ullman, 1996). Analyses were completed using frequencies and rankings.

Results

1. *What environmental knowledge do small business owner-manager's possess?*

To determine whether the owner-manager had acquired environmental management knowledge via training they were first asked: *Have you had any specific environmental management practice training?* The results show that a significant majority of the owner-managers had no practical training in environmental management practices (87%). However, of those that responded no, when asked: *Would this type of training be useful?* The majority (60%) indicated that environmental management training would be useful.

To gain an insight into the owner-manager's personal knowledge and understanding of environmental management, 14 topics relevant to environmental protection and good business practice were listed and the owner-managers were asked to record their current level of knowledge on a simple 4 point scale ranging from poor, fair, good to excellent. Overall, the responses indicated that most believed themselves to have a fair to good knowledge of these issues. When grouped together to ascertain the difference between poor and fair knowledge versus good or excellent knowledge, gaps in the owner-managers' current knowledge became evident. Figures in Table 1 show that when put into a ranked order from area of least to greatest knowledge, in five areas a majority of owner-managers thought they only had a poor to fair knowledge. These areas were: environmental law, cost benefit analysis, environmental planning, biodegradable materials, and air pollution control.

2. *What environmental training do small businesses currently need?*

As well as looking at current knowledge, owner-managers were also asked to indicate knowledge components they would like in any environmental management training for small business. The results are presented in Table 2. Despite the indication that training would be helpful to their business and a reported lack of knowledge in at least five key environmental areas, in general the options that were presented to the businesses were not seen by the majority as beneficial to business, and as they are not educators it was not surprising that no alternative training or information areas were suggested by the owner-managers. The only area where there was majority agreement that training in the area would be useful was in waste and recycling. Other priorities included energy efficiency, cost benefit analysis and the role of small business in environmental management.

3. *What are the elements that should be included in small business training?*

To determine the elements small business owner-managers see as necessary to encourage attendance at training by those in their businesses, a list of 18 possible elements was provided with an option to suggest others (4% suggested other elements). The owner-managers were asked to indicate all items that they considered would encourage attendance. Results presented in Table 3 include only those with a majority positive or negative response. The most strongly supported elements were the use of plain language, best practice examples, and industry specific knowledge. Overall, there was greater consensus on the elements not to include. Those given least support by the owner-managers were: theoretical content, guest speakers, assessments, time to network, and collaboration with others.

TABLE 1: Current environmental management knowledge of the owner-managers

In relation to your business how would you rate your current knowledge in the following areas of environmental management ... (number of answers)	Answer and frequency	Ranking least knowledge
Environmental law (91)	Poor – Fair (65) Good – Excellent (26)	1
Cost-benefit analysis (89)	Poor – Fair (51) Good – Excellent (38)	=2
Environmental planning (88)	Poor – Fair (56) Good – Excellent (32)	=2
Biodegradable materials (89)	Poor – Fair (48) Good – Excellent (41)	3
Air pollution control (90)	Poor – Fair (46) Good – Excellent (44)	4
Noise pollution (89)	Poor – Fair (42) Good – Excellent (47)	5
Water pollution control (90)	Poor – Fair (40) Good – Excellent (50)	6
Energy efficiency (91)	Poor – Fair (37) Good – Excellent (54)	7
Chemical control (90)	Poor – Fair (36) Good – Excellent (54)	=8
Wastewater disposal (89)	Poor – Fair (36) Good – Excellent (53)	=8
Dangerous goods (90)	Poor – Fair (35) Good – Excellent (57)	9
Waste/recycle (91)	Poor – Fair (32) Good – Excellent (59)	10
Water efficiency (90)	Poor – Fair (30) Good – Excellent (60)	11
Safety and health (90)	Poor – Fair (20) Good – Excellent (70)	12

TABLE 2: Small business environmental training requirements

What components of environmental management practice (EMP) training would currently be most suitable for your small business? (number of answers)	Percentage of Yes responses	Ranking
Waste and recycling (74)	58	1
Energy efficiency (73)	44	2
Cost benefit analysis (73)	42	3
Role of small business (73)	38	4
Environmental law (73)	37	5
Water efficiency (73)	32	=6
Products and services (73)	32	=6
Chemical pollution (73)	30	7
Wastewater management (73)	29	8
Water pollution (73)	23	9
Dangerous goods (73)	25	10
Planning (73)	22	11
Air pollution (73)	19	12
Carbon trading (73)	18	13
Noise pollution (73)	16	14
Environmental protection (73)	15	15

TABLE 3: Positive and negative elements in small business training

Attendance at training for those in my small business requires the following elements to be included (number of answers)	Percentage of Yes responses	Ranking
Most positive elements		
Plain language (83)	78	1
Best practice examples (83)	69	2
Industry specific (83)	68	3
Solutions for immediate implementation (83)	60	4
Practical content (83)	59	5
Most negative elements		
Theoretical content (83)	12	1
Guest speakers (83)	17	2
Assessments (83)	15	3
Time to network (83)	24	4
Collaboration with others (83)	28	5

Respondents were also asked to place in priority order which person, organisation or information source they would be most likely to pay attention to and trust. Respondents were provided with a list of 11 options and the opportunity to add other options. Table 4 presents the results based on percentage of priority one scores. On this basis, the Environmental Protection Agency (WA) was the favoured source of information, followed by those within the owner-manager's business network. The source they were least likely to pay attention to was industry magazines.

TABLE 4: Trusted sources of environmental management for small business

In priority order I would be most likely to pay attention to recommendations about environmental management practices and environmental protection in my small business from the following sources (Please place a number against each in order of preference)	Percentage of number one responses	Ranking
Environmental Protection Agency (WA)	18	1
My business network	15	2
Industry association	14	3
Environmental scientist	12	=4
Trade association	12	=4
Federal Government	11	5
Professional environmental consultant	10	6
State Government	7	=7
Local Government	7	=7
Small business professional	6	8
Industry magazine	2	9

Discussion

The results of this research show that the majority of small business owner-managers do not have any practical environmental management training, even though most consider this type of training would be useful. That many say it would be useful, but do not do it, is an interesting finding that may demonstrate the importance that small businesses place on environmental issues relative to other core business functions. This is in line with previous research that small business owner-managers are reluctant to attend training (Billett, 2001; Matlay, 2000).

The five areas where small business owner-managers were found to have relatively poor knowledge (i.e., environmental law, cost benefit analysis, environmental planning, biodegradable materials, and air pollution) point to possible reasons businesses have difficulty engaging in better environmental management practices, that is, if they do not know what the regulations are, how can they implement practices to adhere to them? If they do not understand environmental planning, how can they plan for the environment? If they do not know how to calculate the cost benefits of implementation, how can they see where the competitive advantages might be?

Of 14 areas of environmental knowledge presented in the questionnaire, waste and recycling were the only areas thought by the majority of the small business owner-managers to be valuable areas for training. This finding has three implications. First, small business owner-managers have indicated that they want more information about practices which they are familiar with and are known to have benefits for them (i.e., financial gain and/or removal of unwanted materials that they cannot afford to store). This finding suggests that if educators introduce other environmental practices and show them to be of value, business owner-managers will continue to engage and want to improve their knowledge and performance. The second implication is that demonstrated successful results achieved through engagement in environmental waste and recycling practices may need to be used as leverage to entice small business owner-managers into other types of environmental training. Finally, as no other identified training area clearly interested the majority of small business owner-managers, educators may need to offer a range of shorter training modules, rather than a program that has a single focus, to attract sufficient participation and ongoing engagement.

Other areas where there was some agreement that training would be valuable were related to energy efficiency, cost benefit analysis, and the role of small business in environmental management. Energy efficiency is attractive to small businesses because: (a) cost savings can be made from changes in the business; (b) awareness has been created in this area by both media and government; and (c) it is a practical element of environmental management that small businesses can and do engage in. Therefore, it is possible that energy efficiency will be an area like waste and recycling that will continue to see small business owner-managers looking for more information and to implement new practices. However, the need for training about the role of small business clearly shows that many small businesses do not know what to do and are concerned about doing the wrong thing (Roberts et al., 2006). While this may seem a trivial matter, it is not, and should be addressed in future training programs and clearly understood by both small business and other stakeholders.

To attract participants the following five elements were not recommended for inclusion in a small business environmental education program: theory; assessment; networking; collaborations; and guest speakers. Intuitively, not requiring theoretical content is consistent with small businesses practical/operational focus. The finding on assessments is also consistent with adult and community-based learning principles that suggest learning should not be linked to formal outcomes (Redmond & Walker, 2008). The lack of support for time to network, collaborate or listen to guest speakers was surprising given that many successful small business programs are based on these elements. On reflection, this result may have been based on the owner-manager's premise that attendance at training by those in their small business did not necessarily require these elements to be included as learning could be achieved without them. However, further research may be required to better understand this result.

In summary, environmental education for small businesses should be delivered with the following six elements in mind: use of plain language; provision of best practice examples; offer industry specific information; offer solutions for immediate implementation; offer practical content; and use trusted sources to deliver the program. These elements are consistent with previous studies that have also identified small businesses reluctance to train (Billett, 2001; Redmond & Walker 2008; Walker, Redmond, Webster & Le Clus, 2007). Small business owner-managers in our study indicated that environmental education is important to them, as is being provided with relevant information in an educational style they can relate to.

Gaining the participation of small business is not easy but it is clear from our and other studies that environmental education is key tool. Environmental education

programs should be cognisant of small business owner-managers' perspectives so that they are relevant and engaging.

Conclusion

Serious issues are raised for educators seeking to design and deliver environmental education for small businesses who are a disparate group in need of individualised and specific programs. In our study, several key suggestions were made by the small business owner-managers to encourage attendance at environmental training. These suggestions should assist those involved in the design and delivery of environmental education programs for small businesses. Starting from where learners are at is not a new idea in education, however, this appears to have been forgotten by many who develop programs that are not contextually specific and have not been developed in consultation with small businesses. As small businesses have a significant social, economic and environmental impact they must not be ignored regardless of the complexities that may be encountered in engaging with them.

Keywords: Environmental management; engagement; drivers; environmental knowledge; small business; training.

References

- Aragón-Correa, J. A., Hurtado-Torres N., Sharma, S., & Garcia-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management*, 86, 88–103.
- Australian Bureau of Statistics. (2005). *Characteristics of small business (catalogue 8127.0)*. AGPS: Canberra.
- Billett, S. (2001). Increasing small business participation in VET: A hard ask. *Education + Training*, 43(8/9), 416–425.
- Bradford J., & Fraser E. D. G. (2008). Local authorities, climate change and small and medium enterprises: Identifying effective policy instruments to reduce energy use and carbon emissions. *Corporate Social Responsibility and Environment Management*, 15(3), 156–172.
- Bryan, J. (2006). Training and performance in small firms. *International Small Business Journal*, 24(6), 635–660.
- Condon, L. (2004). Sustainability and small to medium sized enterprises - How to engage them. *Australian Journal of Environmental Education*, 20(1), 57–67.
- Dawe, S., & Nguyen, N. (2007). *Education and Training that meets the needs of small business: A systematic review of research*. NCVER: Australia. Retrieved from <http://www.ncver.edu.au/publications/1737.html>
- Fien, J. (2000). 'Education for the environment: A critique' - an analysis. *Environmental Education Research*, 6(2), 179–192.
- Fowler, F. J. Jnr. (1995). *Improving survey questions: Design and evaluation*. Thousand Oaks: Sage.
- Friedman, A. L., & Miles, S. (2002). SMEs and the environment: Evaluating dissemination routes and handholding levels. *Business Strategy and the Environment*, 11(5), 324–341.
- Gadenne, D. L., Kennedy, J., & McKeiver, C. (2008). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics*, 23(5), 45–63.

- Gerstenfeld, A., & Roberts, H. (2000). Size matters: Barriers and prospects for environmental management in small and medium enterprises. In R. Hillary (Ed.), *Small and medium sized enterprises and the environment* (p. 106–118). Sheffield, UK: Greenleaf Publishing.
- Gough, A. (1997). *Education and the environment: Policy, trends and the problems on marginalisation*. Melbourne: Australian Council for Educational Research.
- Hillary, R. (2000). *Small and medium enterprises and the environment. Business Imperatives*. Sheffield, UK: Greenleaf.
- Hilton, M. (2001). *Design for sustainable development: Success factors*. Report: European Foundation for the Improvement of Living and Working Conditions. Retrieved April 26, 2007, from <http://www.eurofound.eu.int/pubdocs/2001/06/en/1/ef0106en.pdf>
- Kaplan, S. (2000). Human nature and environmentally responsible behavior. *Journal of Social Issues*, 56(3), 491–508.
- Katos, G., & Nathan, S. (2004). *SME delivery mechanisms - Presentation of key quantitative research insights*. Retrieved from http://www.sustainability.vic.gov.au/resources/documents/04_sept_15_TQA_final_report.pdf
- Kuhtz, S. (2007). Adoption of sustainable development schemes and behaviours in Italy; Barriers and solutions - what can educators do? *International Journal of Sustainability in Higher Education*, 8(2), 155–169.
- Luetkenhorst, W. (2004). Corporate social responsibility and the development agenda. *Intereconomics*, 39(3), 157–166.
- Madden, K., & Scaife, W. (2006). Overcoming barriers to SME community engagement. *International Council for Small Business, 51st World Conference*. Retrieved from www.icsb.com
- Matlay, H. (2000). Training and the small firm. In S. Carter & D. Jones-Evans (Eds.), *Enterprise and small business: Principles, practice and policy* (pp. 323–336). Essex, England: Pearson Education.
- McKenzie-Mohr, D., & Smith, W. (1999). *Fostering sustainable behaviour: An introduction to community-based social marketing*. Gabriola Island, Canada: New Society Publishers.
- Melton, K., & Tinsley, S. (1999). Outlook for greener marketing: Unsettled and cyclonic. *Eco-management and Auditing*, 6(2), 86–97.
- Mir, D. F. (2008). Environmental behaviour in Chicago automotive repair micro-enterprises (MEPs). *Business Strategy and the Environment*, 17(3), 194–207.
- Naffziger, D. W., Ahmed, N. U., & Montagno, R. V. (2003). Perceptions of environmental consciousness in U.S. small businesses: An empirical study, *S.A.M. Advanced Management Journal*, 68(2), 23–32.
- Nunally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). NY: McGraw-Hill.
- Parker, CM., Redmond J., & Simpson, M. (2009). A review of interventions to encourage SMEs to make environmental improvements. *Environment and Planning C: Government and Policy*, 27(2), 279–301.
- Peters, M., & Turner, K. (2004). SME environmental attitudes and participation in local-scale voluntary initiatives: Some practical applications. *Journal of Environmental Planning and Management*, 47(3), 449–473.
- Redmond, J., & Walker, E. A. (2008). A new approach to small business training: Community based education. *Education + Training* 50(8/9), 697–712.
- Redmond, J., Walker, E. A., & Wang, C. (2008). Issues for small businesses with waste management: Resources or attitude? *Journal of Environmental Management*, 88(2), 275–285.

- Revell, A., & Blackburn, R. (2004). *UK SMEs and their response to environmental issues*. Small Business Research Centre, Kingston University: Surrey.
- Revell, A., & Rutherford, R. (2003). UK environmental policy and the small firm: Broadening the focus. *Business Strategy and Environment*, 12, 26–35.
- Roberts, S., Lawson, R., & Nicholls, K. (2006). Generating regional-scale improvements in SME corporate responsibility performance: Lessons from responsibility Northwest. *Journal of Business Ethics*, 67, 275–286.
- Stokes, D., Chen, H., & Revell, A. (2007). *Small businesses and the environment: Turning over a new leaf?* A Report for the Workspace Group PLC March 2007. Kingston University: Surrey UK.
- The Australian Industry Group. (2007). *Environmental sustainability and industry. Road to a sustainable future*. Sydney: The Australian Industry Group.
- The National Centre for Business and Sustainability. (2006). *Behaviour change: A series of practical guides for policy-makers and practitioners; Number 9; Encouraging sustainability amongst small businesses*. Retrieved from http://randd.defra.gov.uk/Document.aspx?Document=SD14007_3807_INF.pdf
- Thomas, C., Jennings, P., & Lloyd, B. (2008). Issues in renewable energy education. *Australian Journal of Environmental Education*, 24, 67–73.
- Tilbury, D., Adams, K., & Keogh, A. (2005). *A national review of environmental education and its contribution to sustainability in Australia: Business & industry education*. Report No.4 in a series of 5; 2005; Canberra: Australian Government Department of the Environment and Water Resources and the Australian Research Institute in Education for Sustainability (ARIES). Retrieved from www.aries.mq.edu.au/project.htm
- Tilley, F. (1999). The gap between the environmental attitudes and the environmental behaviour of small firms. *Business Strategy and the Environment* 8, 238–248.
- Ullman, J. (1996). Using multivariate statistics. In B. G. Tabachnick & L. S. Fidell (Eds.), *Using multivariate statistics* (3rd ed., pp. 709–812). NY: Harper Collins College Publishers.
- Walker, B., Redmond, J., & Goeft, U. (2007). *Final report Bellevue sustainable industry project*. Report to Swan Catchment Council, August 2007: Edith Cowan University, Perth, Western Australia.
- Walker, E. A., Redmond, J., Webster, B & Le Clus, M. (2007). Small business owners: too busy to train? *Journal of Small Business and Enterprise Development*, 14(2), 294–306.
- Walker, J. C. (1995). Review: Self-determination in teaching and learning. *Curriculum Inquiry*, 25(1), 101–109.
- Webster, B. J., Walker, E. A., & Barrett, R. (2005). Small business and on-line training: Who is willing to participate? *New Technologies Work and Employment*, 20(3), 248–258.
- Webster, B. J., Walker, E. A., & Brown A. (2005). Small business participation in training activities. *Education + Training*, 47(8/9), 552–561.
- Williamson, D., & Lynch-Wood, G. (2001). A new paradigm for SME environmental practice. *The TQM Magazine*, 13(6), 424–432.
- Yap, C., & Thong, J.Y.L. (1997). Programme evaluation of a government information technology programme for small business. *Journal of Information Technology*, 12, 107–120.