

Chapter 19

Schooling's Contribution to a Sustainable Future in Asia: Can Schools Develop 'Green' Citizens?

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Introduction

The role of schools in contributing to the development of foundation skills such as literacy and numeracy is well known. Yet schools also play a crucial role in preparing future citizens for the complex responsibilities of citizenship in modern democracies. Citizenship education may not be as well known as mathematics and language education, yet it is likely to be found as a component of the school curriculum in most countries. The form it takes varies since it may be a separate school subject, integrated as part of other subjects, a cross-curriculum theme or part of extracurricular activities (Schulz et al. 2010). It may also be optional or compulsory. The specific content of citizenship also varies. The International Civic and Citizenship Education Study (ICCS 2009), involving 38 countries, identified 12 topics that were common although the emphasis given varied from country to country: 'human rights, legal systems and courts, different cultural and ethnic groups, understanding parliamentary voting and elections, the economy and economics, voluntary groups resolving conflict, communications studies (e.g. the media), the global community and international organizations, regional institutions organizations and the environment' (Schulz et al. 2010: p. 51). Schools, therefore, can exert an influence on young

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people's engagement with environmental issues including the contribution they can make to the development of sustainable societies.

There is good reason to believe that schools take this mission seriously. Cogan and Derricott (2000), for example, developed a multidimensional model for citizenship education, one part of which was concerned to encourage students as 'stewards of the environment'. Dobson (2003) showed how a school subject such as English could be used to promote environmental awareness and understanding. Dobson and Bell (2005) promoted the concept of 'environmental citizenship' and showed that it had a particular relevance for school programmes that promote sustainability. Huckle (2008) argued the case for citizenship education to play an important role in promoting sustainable development. Hayward (2012) showed how even children in the primary years can be taught to both understand and act on sound principles related to environmental and social concerns. Finally, a project conducted by the European Commission showed that schools, especially through the development of special skills academies, can play a role in developing 'green skills' for a changing economy (ECORYS 2010). Schools were by no means the only agencies to do so, and firms and private training providers assumed a significant responsibility for on-the-job training for 'green skills' in the context of lifelong learning. Yet partnerships between the full range of providers were seen to be important to address a key issue for the future (ECORYS 2010: p. 6):

More and better skills are indispensable for the European labor force as they make it easier to innovate, adopt new technologies, attract investment, compete in new markets, and diversify the economy. This, in turn, increases productivity and so jobs and growth. For this opportunity be taken, the *European workforce needs access to environmental skills training*. For policy makers, it is important to understand which approaches to providing skills training are most appropriate and deliver the best benefits in terms of achieving sustainable development and providing good-quality jobs.

The study to be reported in this chapter investigated the role of schools in developing understanding of the environment as a key citizenship value that has the potential to influence not just attitudes but knowledge and actions as well. As shown above, the issue of sustainable development including the development of 'green skills' is too important to be left to chance. The issue is whether schools can be proactive in supporting students to become engaged in an agenda that has both personal and social relevance – an agenda related to the future of their societies.

The Study

Data for the study was drawn from ICCS 2009 (Schulz et al. 2010) in which 38 countries and 140,000 students were involved. The particular focus of the current study was on the participating Asian societies: the Republic of Korea; Taipei, China; Hong Kong, China; Indonesia; and Thailand. While these societies cannot be seen to represent the whole of Asia, they are spread across East Asia (Hong Kong, China; Taipei, China; the Republic of Korea) and Southeast Asia (Thailand and Indonesia) with variations in their respective human development indices

Table 19.1 Sample sizes for students, teachers and principals

Samples	Taipei,China	Hong Kong, China	Indonesia	Republic of Korea	Thailand
Students	500	500	500	500	500
Teachers	500	500	500	500	500
Principals	150	84	140	149	149

(very high to medium), gross domestic product (ranging from \$1918 in Indonesia to \$ 29,912 in Hong Kong, China) and experience with democracy (limited in Hong Kong, China, emerging in Indonesia, developing in the Republic of Korea and Taipei,China and often unstable but developing in Thailand).

Instruments

Students, teachers and principals answered survey questions using separate instruments specifically designed for each group. These instruments were originally developed in English but subsequently translated into local languages under the supervision of International Association for the Evaluation of Education Achievement (IEA) translation protocols (Schulz et al. 2011: pp. 52–57). Only selected questions will be analysed in this study, and these are reported below.

Sample

The sampling methodology followed in ICCS 2009 is described fully in Schulz et al. (2010: pp. 59–68). Student samples were drawn from grade 8 students between the ages of 13 and 14. The average age of the sample was 14.3 years (SD = .56) with student ages ranging from 14.2 in Taipei,China to 14.7 in the Republic of Korea. 49.9% of the sample were male and 50.1% were female. Sample sizes for each participating society are shown in Table 19.1.

Measures

Students

Environmental Knowledge and Skills

Questions related to environmental knowledge and skills were selected from the Civic Knowledge scale reported in Schulz et al. (2010) (five items).

Engagement in Environmental Activities

‘Extent of student involvement in environmental organizations’ and ‘student participation in activities to protect the environment’ (2 items)

Context

‘Student perception of the respect shown by their country for the environment’ (single item)

School

Teachers

- 'Teachers' participation in environmental organizations' (single item)
- 'Teachers' confidence in teaching about the environment' (single item)
- 'Teachers' perception of class room opportunities for participation in activities related to the community geared to local area' (single item)

Principal

- 'Principals' perception of school opportunities for participation in activities related to the community' (single item)

Data Analyses

'Environmental knowledge and skills' were reported as percentage correct for each question for each participating society. For the student and teacher survey, mean scores and standard deviations were computed for each participating society for the following five items: 'student involvement in environmental organizations', 'student participation in activities to protect the environment', 'student perception of the respect shown by their country for the environment', 'teachers' participation in environmental organizations' and 'teachers' confidence in teaching about the environment'. Two items – 'teachers providing students' environmental experiences' and 'principal's perception of schools providing opportunities of student participating in environmental activities' – were reported in percentage for each society.

The final section of the chapter provides conceptual analysis of issues that need to be considered for the future based on the baseline data analysed in the first part of the chapter.

Results***Environmental Knowledge and Skills***

The five questions selected from the 79-item Civic Knowledge scale dealt specifically with environmental issues affecting societies and how these might be managed. As part of the international test, these are secure questions, so their specific content cannot be made public. In general, however, the items dealt with the impact of the environment, responsibility for the environmental, qualities for environmental leadership, community resources for dealing with environmental issues and conflicts of interest when dealing with members of the community on environmental issues. The correlation of these items with the total civic knowledge score ranged from .27 to .44 (Schulz et al. 2011: pp. 132), while the highest correlation among all 79 items is .49, suggesting a moderate relationship between these individual environment items and students' civic knowledge in general. In terms

of item difficulty, the item parameters ranged from -1.17 to $-.35$ (Schulz et al. 2011: pp. 144), suggesting these were not overly difficult items for students compared to other items on the scale. These measurements were computed using a calibration sample ($n = 500$) from each participating society, and different results might be obtained if item parameters were computed for individual societies. Nevertheless, the above provides a general picture of the content and psychometric properties of the items to be reported below.

Since the Civic Knowledge questions were distributed in multiple booklets, on average, each student had answered a portion of the questions (Schulz et al. 2010). In this study, only those students who responded to all five environmental questions were analysed, resulting in more than 500 cases analysed for each society to ensure adequate representativeness. Figure 19.1 shows the results of students' responses to the five questions in each participating society (the Republic of Korea; Taipei, China; Hong Kong, China; Indonesia; and Thailand). For ease of interpretation, it should be noted that Question 1 dealt with the impact of the environment, Question 2 dealt with responsibility for environmental action, Question 3 dealt with qualities for environmental leadership, Question 4 dealt with the use of community resources for understanding environmental issues and Question 6 dealt with conflicts of interest when dealing with members of the community on environmental issues.

The first point to note about these results is that there is considerable variation in students' responses. Individual questions attracted different levels of correct responses from different groups of students. Question 1, concerned with the impact of the environment, seems to have been a relatively easy question (around 80% correct responses) for students from all societies except those from Indonesia who recorded a very low level of correct responses (around 25%). Answers to Question 2, concerned with taking action on environmental issues, were more consistent across societies ranging from 46% to 63% correct responses, but this area of understanding was not as well understood as the previous one, with the exception of Indonesian students (56% correct compared to 24% on Question 1). Question 3, concerned with the qualities needed for environmental leadership, was well understood by students from East Asia (correct responses ranging from 80 to 90%) but less so by students from Thailand (61% correct responses) and Indonesia (51% correct responses). Question 4, concerned with the use of community resources to assist with understanding of environmental issues, was well understood by a large majority of students from Taipei, China and Hong Kong, China (81% and 88% of students, respectively), somewhat more moderately by students from the Republic of Korea and Thailand (around 70% for each) but less so by students from Indonesia (around 48% correct responses). Question 5, concerned with possible conflicts of interest when working with the community on environmental issues, seems to have been the least understood issue by most students with correct responses ranging from 52 to 61%. The exception to this statement was Indonesian whose students registered the highest number of correct responses (61%) on this area of understanding.

In addition to the regional variation in knowledge and understanding of environment described above, there was also variation within societies. Thus, Hong Kong, China did well on three questions (1, 3 and 4) with at least 80% correct in each case.

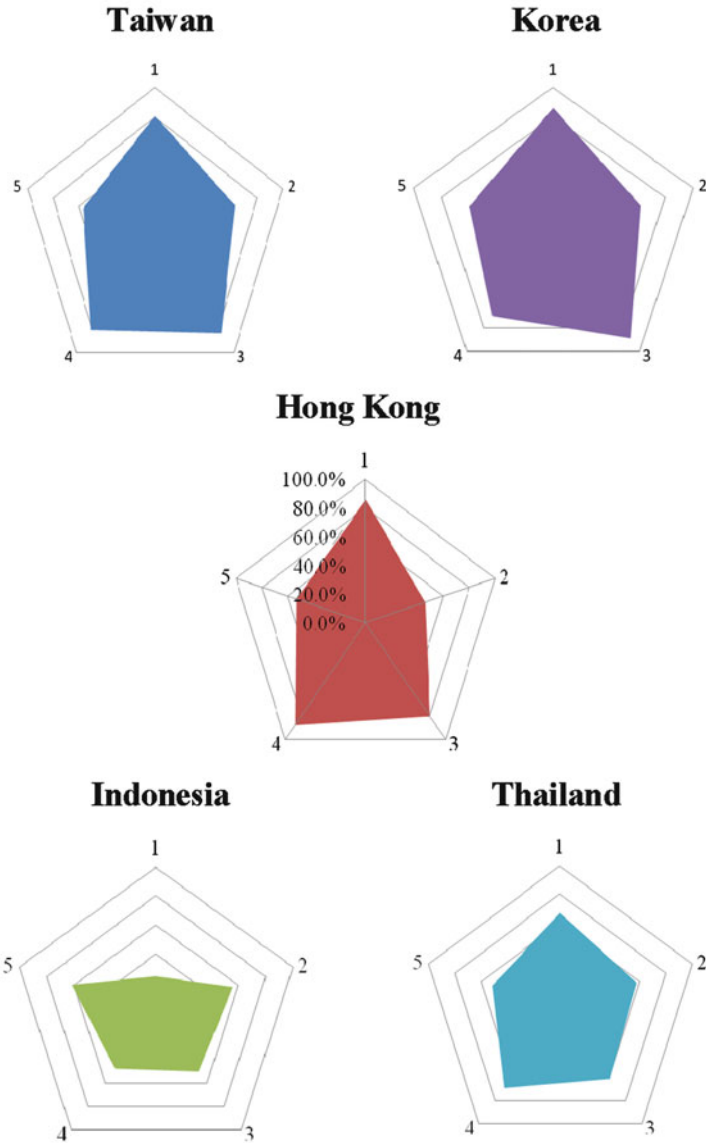


Fig. 19.1 Percentage of correct responses for Questions 1–5 in each participating society

Yet for Questions 2 and 5, only 50% of students scored correct responses. Indonesia represented the opposite case – it had close to the lowest number of correct responses for Questions 1–4 but the most correct responses for Question 5. Students from Taipei, China had relatively high levels of responses on most questions (over 80% correct on three questions and close to 60% correct on two questions), and students from the Republic of Korea showed a similar although not quite as strong a pattern of responses (over 85% correct responses on two questions and over 60%

on two questions) Thai students had moderate levels of correct responses across all questions (ranging from 51% to 67% across all questions).

These variations in students' environmental knowledge and skills, both within societies and across the region, indicate uneven patterns of student learning and uneven engagement with this area of the school curriculum. This issue will be taken up for further discussion later in the chapter.

Student Engagement in Environmental Activities

Table 19.2 indicates the extent to which students across the region are engaged in out-of-school environmental activities – specifically with environmental organizations and actions to protect the environment. Two trends are clear from these results. First, student engagement in environmental organizations across the region is relatively low with mean scores ranging from 1.07 (Republic of Korea) to 2.04 (Thailand). This indicates that the majority of students had in all likelihood never engaged in such organizations. The second trend, however, represents a somewhat different picture. When asked whether 'good citizens' should take action to protect the environment, the level of positive endorsement ranges from 3.27 to 3.68 out of 4, indicating that students across the region believed that taking environmental action is a relatively important attribute of a 'good citizen'. These results may not be contradictory.

Assessing current engagement in an environmental organization is a measure of the here and now – what students are actually doing. The 'good citizen' question measures an attribute of adult citizenship – from the point of view of students, it is a measure of what should be done. Thus while current student engagement in environmental organizations is low, there is little doubt that across the region, students view the environment as a key issue of citizenship concern and perhaps one in which they themselves will engage in the future.

Issues such as engagement in activities related to civic issues are often influenced by the context in which individuals find themselves. Thus students were asked whether they thought their respective governments showed a lot of respect for the environment. The responses showed marked differences across the region. For students in East Asia, there was a moderately positive level of endorsement of their governments' respect for the environment ranging from 2.30 (SD = .88) in the Republic of Korea to 2.78 (SD = .81) in Hong Kong, China and in Taipei, China 2.90 (SD = .86). In Southeast Asia, the responses were more positive with students in Indonesia registering an average score of 3.30 (SD = .69) and those in Thailand 3.31 (SD = .64). Given the analysis in the previous section, it is of interest to note that in those societies where student knowledge and skills seemed to be higher (Republic of Korea and Taipei, China), students indicated that their governments had relatively lower respect for the environment. The reverse is also true. In those societies where knowledge and skills scores were generally lower (Indonesia and Thailand), students indicated that their governments had a relatively higher respect for the environment. These results will be discussed later in this chapter.

Table 19.2 Comparison of students' responses to environmental-related items across five Asian societies

Item	Hong Kong, China			Taipei, China			Republic of Korea			Indonesia			Thailand		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Participation in environmental organization	479	1.34	0.591	494	1.11	0.364	497	1.07	0.306	484	1.88	0.868	495	2.04	0.782
Good citizen – protect environment	480	3.28	0.749	497	3.36	0.744	500	3.27	0.749	485	3.45	0.665	495	3.62	0.584
Agree – government respect for the environment	478	2.78	0.811	495	2.90	0.855	497	2.30	0.881	477	3.30	0.689	497	3.31	0.638

School Support for Promoting Concern for the Environment

Teachers play a fundamental role in developing students' knowledge and skills to the point where it is now generally accepted that the quality of teachers in a school system plays the deciding role in student learning (Hopkins 1999; Darling Hammond 2000; Rivkin et al. 2005). In what follows, various aspects of teacher engagement with issues concerning the environment will be reviewed).

The most positive attribute of teachers across the region was that they felt quite confident teaching about the environment. Teachers in Southeast Asia seemed somewhat more confident than their peers in East Asia with scores for both Indonesia and Thailand at 3.43 (SDs = 0.61 and 0.54, respectively) compared with Hong Kong, China, the Republic of Korea and Taipei,China where the respective scores were 3.01 (SD = .54), 3.4 (SD = 0.59) and 3.19 (SD = .073). This suggests that where the environment is part of the school citizenship education curriculum (as it is in the Republic of Korea, Taipei,China, Indonesia and Thailand., Schulz et al. 2010: p. 51), it will be well taught. It is interesting to note that Hong Kong, China reported that the environment did not form as part of the citizenship education curriculum (Schulz et al. 2010: p. 51) and its teachers registered the lowest level of confidence in teaching about it.

When it came to providing students with experiences about the environment that would focus on the local community, it seems that some teachers did this but it was by no means a universal practice, and there were different levels of endorsement in different parts of the region. The most positive responses came from teachers in Thailand where almost 93% of teachers said they focused on community activities followed by Indonesia with almost 76% providing such experiences. These positive responses were in stark contrast to the responses from teachers in East Asia. Only 17% of teachers in Taipei,China provided these experiences, 34% in Hong Kong, China and 57% in the Republic of Korea. These figures suggest that using the local community as a resource for helping students understand environmental issues varies considerably and is highly dependent on location.

Moving the focus outside of schools, teachers were asked about their participation in environmental organizations – just as the students had been. Just like the students, teachers across the region reported low levels of participation in such organizations. Ranging from 1.21 (SD = 0.51) in the Republic of Korea, 1.28 (SD = 0.50) in Taipei,China, 1.40 (SD = 0.71) in Indonesia and 1.60 (SD = 0.77) in Thailand. High levels of participation would have yield scores between 3 and 4. The pattern of participation in out-of-school activities – or lack of it – is uniform across the region. It seems that feeling confident teaching about the environment and using the community as a resource for environmental education may not necessarily be precursors for more active engagement in environmental issues that confront the community. It maybe that being a teacher and a community activist at the same time are not seen as compatible activities.

Teachers, students and classrooms are embedded within schools. To get some ideas of the importance of this context, principals were asked how many of their grade 8 students in the last year had been provided with activities that engaged them in local environmental activities. The responses were relatively positive across the

region with principals, indicating that at least 90% of students had been provided with some kind of activities that had engaged them in the local community. Yet there were differences in the opportunities provided in different parts of the region based on the emphasis placed on different response categories. For East Asian societies, the emphasis was on providing these opportunities for 'some' students – chosen by 64% of principals in the Republic of Korea, 61% in Hong Kong, China and 54% in Taipei, China. In Southeast Asia, the emphasis was on the categories 'nearly all' or 'most' students – 76% of principals in Thailand and 67% in Indonesia. Emphases such as these can be taken to represent the priority given to such activities, and it seems there may be different priorities in different parts of the region. This issue will be discussed later in the chapter.

Discussion

With reference to the sustainable school framework in the United Kingdom, Scott (2009: pp. 34–35) highlighted some key issues for schools in contributing to sustainability:

A key component of the DCSF's (Department of Children, Schools and Families) approach is a focus on curriculum, community and campus which emphasizes that, whilst what schools try to teach is important, how the institution as a whole is led, how its resources are managed, and how it contributes to the communities it serves, are also key elements – as is how all these are pulled together so that students see, and are involved in addressing, the wider picture of sustainability. A positive feature of the sustainable schools framework is that it's been written in a way to help heads, teachers and governors understand recent policy focuses such as health, social integration, energy and transport.

The framework to which Scott refers provides a comprehensive statement about the breadth of the sustainability agenda that is seen to influence all aspects of a school's life. The focus is not just the classroom but the community and significant issues within the community. It is clearly a significant challenge for schools, and it is well to keep these broader issues in mind, for they suggest a quite particular orientation to schools and schooling, and it will be helpful in addressing the issues that have emerged from this study.

In this chapter, we have tried to explore just how well schools in selected Asian societies are contributing to the agenda outlined above. The Asian focus has been quite deliberate because it is in this part of the world that economic growth is proceeding apace and fuelling growth elsewhere. This economic dynamism has its positive side – especially in terms of its impact on lagging economies in other parts of the world. Yet unbridled growth that is not sustainable, growth that is not inclusive and growth that does not take account of any negative impact on the environment will not be in the best interests of the planet. Thus students as future citizens need to possess knowledge, values and skills that will enable them to negotiate the best solutions for a sustainable future. To what extent do the students surveyed as part of the study reported here appear to be capable of playing this important role?

Lack of knowledge and skills, more prevalent in Southeast Asia than East Asia, will be a fundamental issue for the future. As the quote from Scott (2009) above indicates, it is not just academic knowledge that is required – it is knowledge of the community and the world outside of schools. Yet this study found that both teachers and students had little experience with environmental organizations outside of school. It seems that education about the environment is largely school focused and maybe even classroom focused (although teachers and principals did indicate that they looked to the local community to engage students with environmental activities). Yet if the community is the focus of sustainability issues, then it also needs to become the focus of the school curriculum.

The unevenness of knowledge and skills across the region is problematic because the problems facing societies are common, for example, economic growth (or lack of it), social and economic exclusion of marginalized groups, including women and girls, old jobs disappearing and fewer newer ones replacing them and environmental degradation. Students need to be equipped to understand these issues as well as confront them. Based on the study reported here, students in the Asian region are on the right track but more will be required. Knowledge needs to be deeper and more widely spread, community engagement needs to be given a higher priority and real-world rather than academic issues need to become the focus of students' experiences.

These kinds of directions for reinforcing new knowledge and skills will be problematic in a part of the world where examinations play such a major role in school systems, where entrance to universities is limited and where competition remains at the heart of education systems. This may well be one reason why students from East Asia appeared to have less experience with community issues and environmental organizations – this takes time away from the study of the academic curriculum that is the focus of examinations. There is much talk about the 'overcrowded' curriculum – too much content to be covered and more and more expectations about what should be included. Traditionalists will also value what has always been part of the school curriculum, but the future demands that the curriculum be thought again to ensure that its content, values and skills focus not on the past but on the future – a sustainable future.

The role of parents, which was not included in the study reported here, must also be taken into consideration when the fundamental aims of the school curriculum are being considered. The examination 'culture' that is more evident in East Asia than Southeast Asia is fuelled by parental aspirations for the career advancement of their children. As Kennedy and Lee (2008) have shown, this culture is embedded in deep cultural values related to Confucianism and to the meritocratic ethic that underpins it. Examinations are the public policy instruments that keep this culture alive and that provide the pathway to limited university places. It is in this context that the traditional academic curriculum reflected in examinations is also supported by parents: it provides the pathway to a successful future for their children. Talking of a more relaxed approach to schooling, a more relevant approach to the curriculum and the removal of examination pressures will elicit negative responses from parents. Changing the school curriculum to align more with community needs is not an easy task. The difficulties are not just with

conservative educators but with community members in the form of parents who continue to look for meritocratic outcomes that can be delivered by an academic curriculum and a public examination system.

As for teachers, this study has shown that while they are confident teaching about the environment and using the environment as a resource, they may not themselves be good 'environmental citizens'. They teach it – they do not live it. There is some literature on this issue suggesting that in the area of citizenship education, teachers themselves need to be role models – they need to be 'active citizens' since this is exactly what they are encouraging students to be (Kennedy 2005, 2011). It is, of course, a big task for teachers who have so many varied responsibilities and for whom teaching about the environment is just a small part of these. Yet teachers are citizens as well – the responsibility for the future is as much theirs as it is students'. It does not seem unrealistic for them to engage in issues that are important to society and seek to influence them. It may not be part of their job description but even from the perspective of students 'it is what good citizens do'.

This study looked at two context variables – the country and the school that have considerable potential to influence students' attitudes. It seems axiomatic that if schools are to play a role in supporting the sustainability agenda, then governments themselves should be seen supporting a similar agenda. Based on the result of this study, students in Southeast Asia seem to have more faith in their governments on this issue than students from East Asia. Of course, these are simply student perceptions, so they may not reflect the realities but perceptions coming from somewhere; so it needs to be assumed that students are 'reading' their local political scenes in order to pick up these perceptions. At the very least, this means that governments need to do a better job communicating their policies and priorities for the sustainability agenda, but it also may mean that governments should take a deeper look at their policy priorities to ensure that they reflect future needs in this area. If students are to be good environmental citizens, then their governments need to be out the front leading on this issue.

On the issue of schools as contexts for encouraging environmental learning, the results of this study have been encouraging. Teachers appear to be confident teaching about the environment; there are links with community issues and students are gaining experiences in being exposed to these issues. In terms of school leadership, principals seem to be aware of the need to provide community-based learning opportunities for students. When all of this is put together, it suggests that a good foundation has been laid. The question is whether it is enough and whether more can be done. This raises important issues about the expectation of schools in Asian societies and the extent to which they might orient themselves to addressing key community issues relating to the environment and to sustainability. Addressing this issue takes us beyond the data provided in this study. Yet it seems important to do so in order to develop a picture of how schools in the region might move from where they are to where they need to be if they are to play a role in advancing the sustainability agenda. The next section of this chapter will address this issue in a preliminary way as means of demonstrating a possible future direction for schooling.

Sustainable Futures: A Role for Schooling

There is no shortage of literature on the kind of transformations needed to enable schools to meet the challenges of the future. They can be summarized under three broad headings: a whole-school approach to sustainability, a curriculum linked to the community and a new skills agenda. Each will be addressed in what follows.

A Whole-School Approach to Sustainability

'Environmental education' and 'sustainability education' are related constructs, but they are not the same. A more inclusive concept that embraces both is 'Education for Sustainable Development' [ESD] described by Gough (2005: p. 39) in the following way:

ESD recognizes the importance of economic viability and productive employment at the community, regional, national, and international scales and provides students with the life skills they need to be constructive and active citizens, capable of and committed to contributing to a peaceful, abundant and sustainable future.

ESD brings together both the outcomes of schooling with the processes of schooling and is deliberately linked to citizenship preparation. This means that the citizenship curriculum can be enhanced by focusing on broader economic and social issues rather than narrowly constructed issues related to political institutions and political processes. Most importantly, community engagement can be factored into the curriculum so that citizenship issues are not just passive issues about voting, political parties and engagement with the media. Rather, they are about genuine civic engagement that is a much vaunted outcome for citizenship education. Sustainability issues such as those concerned with growth and development, poverty and social inclusion can be genuine areas of investigation for a citizenship curriculum underpinned by ESD. As Gough (2005) showed in the Australian context, some of these things are already happening, so it is something to which education systems in Asia can pay attention.

This expanded understanding of sustainability education does not have to be confined to what schools directly teach. Schools themselves can become sustainable communities. This can encompass everything from constructing 'green schools' as reported by Oetinger (2010) to People's Republic of China's *Green School Project* that focuses on 'whole-school environmental management and protection, EE [Environmental Education] curriculum and professional development, and greening of school grounds' (Henderson and Tilbury 2004: p. 13). That is to say, schools in their use of energy resources, their building materials, their daily operations and their values can reflect what it is they believe society itself ought to be.

A good example of the development of the idea of schools as sustainable communities is the *Hong Kong Green School Award Project* sponsored by the government, higher education institutions and the Hong Kong Productivity

Council. The purpose of the scheme is to ‘encourage schools to formulate a school environmental policy and environmental management plan towards a green school; enhance environmental awareness, develop environmentally friendly attitude and promote green practices among school managers, teachers, non-teaching staff, students and their parents’ (Environmental Campaign Committee 2012). This is not the only example of such an initiative as shown by Henderson and Tilbury (2004), but it has been chosen here because it demonstrates that within the region, work has already begun. It is work that needs to be accelerated so that schools might stand out in their communities as exemplars of what can be done if there is a commitment to a green agenda. Barton (2000) has discussed ‘the potential for eco-communities’, and there is no reason why schools should not play a leading role in these communities.

A Community-Oriented Curriculum?

Reference has already been made to the importance attached to examinations in Asia and their role in providing opportunities for advancement in meritocratic societies. The ‘work hard ethic’ induced in particular by Confucianism means that examinations are seen as the means by which families can gain advantage for their children irrespective of low income or other social disadvantage. Examinations are inevitably linked to a traditional academic curriculum – often one that streams students so that the focus is on preparation for university entrance even when the majority of students will not make it through the extremely competitive system that allocates places. Yet such a curriculum will not help create the kind of schools referred to above and will certainly not contribute to them.

A considerable reform is needed to reorient the school curriculum so that it can be more strongly linked to the community and its needs. The academic curriculum is linked to the past: old knowledge, old skills and old values. It is embedded in debates about forms of knowledge that were constructed largely in the 19th century as mass primary education was being pursued in most Western countries and when secondary education remained the preserve of the elite. The 21st century now provides access to higher education for larger and larger segments of the population, and lifelong learning means that schools provide a starting point in a learning journey but by no means the whole journey. The school curriculum can move forward to become more inclusive of multiple forms of knowledge, more oriented to issues rather than subject disciplines and more geared to the solution of world’s real problems rather than textbook problems.

Yet such a reform requires leadership – it will not come of its own accord. Many governments in Asia have initiated education reforms as part of renewal for the 21st century (Kennedy and Lee 2008: pp. 24). Yet for the most part, these have not dealt with examination systems that remain entrenched in places like the Republic of Korea, Hong Kong, China, Taipei, China and Singapore. We have seen in the study reported here that education systems have started to embed issues related to the

environment in the school curriculum, but this aspect of the curriculum remains marginal while examinations hold such sway. Government leaders need to be bolder if schools are to contribute to the sustainability agenda. Curriculum reform needs to be more transformational and geared to engaging students as future citizens in major issues of the day – school graduates need to be problem solvers not just passive receptors of outdated knowledge. This agenda is a significant challenge for education policy makers, but it is one that will have to be met if sustainability is to be the core priority for the future.

New Skills for New Times

Linked to radical curriculum transformation is the issue of what kind of skills should be expected from school graduates? There is a current emphasis on so-called 21st century skills – problem solving, critical thinking, innovation, communication, team work, etc. Yet there are also reports of a different kind of ‘21st century skill’ – often called ‘green skills’. An initiative in Victoria, Australia, has enabled senior school students (years 10 and 11) to study for a Certificate in Carbon Management that would both provide them ‘green skills’ as well as contribute to their Australian Tertiary Admission Rank, thus giving a vocational subject the same status as an academic subject in the school curriculum (*Education Review 2012*). A number of nongovernmental organizations, also in Australia, have developed the ‘igreen program’ that supports students about to leave school in developing environmental assessment skills that they then must use on real assessments in the local community. It was also certificated training that gave students a credential they could use in seeking employment (Steplight 2011). These examples show that schools themselves can become the means by which students are trained to learn new skills that can help them with their careers but also contribute to sustainability in a very practical way. Such curriculum experiences are a long way from the traditional academic curriculum, but they go a long way towards integrating schools and the community. It is a direction that many education systems in Asia could well consider in the light of future needs related to sustainable futures.

Limitations

There were three main limitations to this study. First, it drew on secondary data for analysis, so there was no opportunity to ask new questions or interrogate different groups (e.g. parents). These two issues would be well addressed in future studies. Second, the analysis undertaken was descriptive rather than bivariate or multivariate. The reason was to try and establish some baseline information in a relatively unexplored area. Future research should look for relationships among the variables identified here and build explanatory models. Third, while societies from the Asian

region were the focus of this study, only five such societies were included on account of the secondary nature of the data that was available. To gain a broader picture of the sustainability issue across Asia, more societies could be included in future studies, especially those that may show greater variation than that shown in the current study.

Conclusion

This study has used both empirical and conceptual methods to show how schools currently contribute to the sustainability agenda and how they might continue to do so in the future. The results have shown that while environmental education appears to be part of the school curriculum for most students in the selected societies, its outcomes are uneven and the opportunities for students to engage with real-world environmental problems are also uneven across the region. It has been suggested that a more inclusive area of study such as Education for Sustainable Development (ESD) might be a more effective way of linking issues of sustainability with the school curriculum. In turn, this can be linked to citizenship education since sustainability should be a key value for students as they take on the responsibilities of citizenship on leaving school. To have the requisite knowledge and skills to do so seems an important outcome of schooling in the 21st century.

Finally, examples were provided towards the end of the chapter of some ways in which schools have incorporated 'green skills', as distinct from knowledge and values, as outcomes in the curriculum. While the examples provided are somewhat limited, they do show that there is a potential to value such skill development while not undermining other forms of knowledge and skills acquisition. There are important lessons here if schools are to shoulder more responsibility for the sustainability agenda and hopefully education systems will embrace these opportunities in the interests of a more highly skilled population and a more sustainable future for all.

Acknowledgements The research reported in this chapter draws on a project funded by the Research Grants Council of Hong Kong, China, *Asian Students' Conceptions of Citizenship: Constructing Indigenous Views of Citizens, Citizenship Education and the State* [Project No: 842211]. The views expressed are those of the authors and not of the funding body.

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Appendix

Tables 19.2 and 19.3 show the descriptive statistics for each of the scales referred to above. There were four response categories for most questions (unless otherwise specified), with '4' representing the most positive endorsement and '1' representing the most negative endorsement. Tables 19.4 and 19.5 show the distribution of the responses in the questions reported.

Table 19.3 Comparison of teachers' responses to environmental-related items across five Asian societies

Item	Hong Kong, China		Taipei, China		Republic of Korea		Indonesia		Thailand						
	N	M	N	M	N	M	N	M	N	M					
Personal activities – environmental	491	1.44	0.611	495	1.28	0.503	492	1.21	0.508	493	1.40	0.705	492	1.60	0.766
Confidence in teaching about environment	102	3.01	0.554	90	3.19	0.733	83	3.04	0.594	69	3.43	0.606	53	3.43	0.537

Table 19.4 Comparison of teachers’ participation in local environmental activities at school across five Asian societies

Item	Hong Kong, China		Taipei, China		Republic of Korea		Indonesia		Thailand	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Providing students environmental experiences	34.3%	65.7%	17.1%	82.9%	56.6%	43.4%	75.7%	24.3%	92.6%	7.4%

Table 19.5 Comparison of principals' responses to opportunities of student participating in environmental activities across five Asian societies

Item	<i>During the current, how many students in the school had opportunities to take part in environmental activities?</i>				
	All or nearly all (%)	Most of them (%)	Some of them (%)	None or hardly any (%)	Not offered at school (%)
Hong Kong, China	7.3	26.8	61.0	2.4	2.4
Indonesia	29.5	37.4	23.7	5.0	4.3
Republic of Korea	8.8	23.0	64.2	3.4	0.7
Thailand	22.8	43.6	30.9	2.7	0.0
Taipei, China	5.4	29.7	54.1	8.8	2.0

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