

# Trend of Environmental Education in Canadian Pre-Service Teacher Education Programs from 1979 to 1996

Emily Lin, University of Nevada, Las Vegas, United States

## **Abstract**

*Despite being recognized as a major priority for research and action in many major international conferences, environmental education research in pre-service programs has been given little attention in Canada. The only systematic national evaluation of environmental education at the teacher preparation level in Canada was conducted by John Towler (1980/81), nearly 20 years ago. A national survey using a modified version of Towler's questionnaire was distributed to all pre-service teacher training institutions across the Canadian provinces to determine the current status of environmental education which pre-service teachers receive in their preparation programs. The survey findings revealed that, for nearly two decades, the number of Canadian teacher preparation institutions offering environmental education courses to pre-service teachers has remained generally low and the level of priority granted nominal.*

## **Résumé**

*L'éducation environnementale a été reconnue, lors de nombre de conférences internationales, comme une priorité majeure en recherche autant qu'en pratique. Pourtant, la recherche dans ce domaine a occupé peu de place dans les programmes pour futurs enseignants au Canada. John Towler est le seul à avoir mené, il y a vingt ans (1980-1981), une étude méthodique de l'éducation environnementale dans la formation de futurs enseignants. Un sondage national récent, s'appuyant sur une version modifiée du questionnaire conçu par Towler, a été distribué à toutes les institutions de formation de futurs enseignants au Canada, afin de prendre le pouls de l'éducation environnementale telle qu'elle est présentée actuellement dans les programmes de formation. Le sondage révèle qu'en vingt ans les établissements de formation de futurs enseignants sont restés peu nombreux à offrir des cours en éducation environnementale et que la priorité accordée à celle-ci demeure fictive.*

## Need for Research at the Pre-Service Teacher Education Level

Continually identified as one of the key agents of change, classroom teachers play an important part in promoting and improving the capacity of individuals to address environmental and development issues and problems. Wilke (1985) states that “if teachers do not have the knowledge, skills, or commitment to environmentalize their curriculum it is unlikely that environmentally literate students will be produced by K-12 school” (p. 1). Others agree with Wilke’s position (Buethe & Smallwood, 1987; Childress, 1978; Fien & Rawling, 1996; Gigliotti, 1990; Hooper, 1988; Hungerford, Peyton, & Wilke, 1980; Lucko, Disinger, & Roth, 1982; McClaren, 1989; National Environmental Education Advisory Council, 1996; Robitaille & Sauvé, 1990; Sauvé & Boutard, 1991; Schwaab, 1975; Simmons, 1987; Simpson, McLaughlin, Volk, & Hungerford, 1989; Smith-Sebasto & Smith, 1997; Stapp, Caduto, Mann, & Nowak, 1980; Tilbury, 1994). Since classroom teachers are the ultimate source of environmental education implementation in schools, it is both sensible and necessary to examine the preparation of teachers for environmental education.

Ministers of Education in Europe and North America who participated in UNESCO conferences have continually emphasized that one of the greatest needs in the area of environmental education is the establishment of good pre-service courses for training teachers (Fien & Rawling, 1996; Knapp, 2000; Tilbury, 1994; UNESCO, 1980; UNESCO-UNEP, 1988; Wilke, Peyton, & Hungerford, 1987). Even in the 1977 Intergovernmental conference on environmental education in Tbilisi, European and North American educational authorities “recognized the importance of pre-service education and the need for teachers to understand the importance of environmental education in their teaching and called for steps to be taken to provide appropriate training of teachers in environmental education” (Wilke, Peyton & Hungerford, 1987, p. 3). In addition, the preparation of teachers has been cited by successive UNESCO-UNEP conferences and reports as being a major priority for research and action in advancing environmental education (Fien & Rawling, 1996; Knapp, 2000; Tilbury, 1992, 1994; UNESCO, 1980, 1997; UNESCO-UNEP, 1988; Wilke, Petyon, & Hungerford, 1987).

### Pre-service Teacher Education Programs in Canada: Brief Summary of Past Studies

However, very few countries have consistently conducted national studies on the nature of environmental education programs for pre-service teachers. In Canada, Rioux (1973) reported that, in the early 1970s, little environmental education training was provided for teachers in the colleges and faculties of education at universities with only six out of the 41 universities

offering environmental studies programs. Subsequent to Rioux, Towler (1980-81) has been one of the very few investigators to study the state of environmental education in Canada. In his cross-country study examining the status of environmental education in teacher training institutions, conducted nearly 20 years ago, Towler attempted to assess the practice and problems in terms of:

How many institutions offered courses in environmental education content, background, methodology; how many faculty members were teaching in this area, and what kind of background these faculty members might have . . . how environmental education was being handled in the schools that they [faculty members] visited; whether some sort of certification in environmental education might be desirable or not; and isolate some of the factors that were perceived as major problems in environmental education. (p. 13)

Obtaining an overall response rate of 85%, Towler (1980/81) found that, in the 1977-78 academic year, only 18 out of the 41 (43%) teacher training institutions that responded to the thirteen-item questionnaire offered methodology courses. Among these institutions, the main emphases in the environmental education methodology courses were in the areas of ecology, outdoor education, and biology. Towler specified that more prospective teachers were being schooled in ecological content than in strategies and technique for assisting students to achieve the goals of environmental education. Echoing Towler's findings, Stapp et al. (1980) emphasized that one of the major problems with teacher training programs is that inexperienced teachers are usually left on their own to develop their own strategies for teaching environmental education. As a result, environmental education information is commonly conveyed to students through the lecture approach. Thus, the low number of teachers trained to teach environmental education cannot help but contribute to a "neutral if not a negative attitude towards the subject [environmental education] and its importance" (Towler, 1980/81, p. 15).

Towler (1980/81) concluded in the study that with so few teacher training institutions involved in the promotion of environmental education, there was a strong need for improved communication, research, funding, and teaching resources in teacher preparation. Since Towler's study, no other comprehensive report has examined the status of environmental education in teacher training programs in Canada. An assessment of the present state of pre-service teacher education programs in Canadian institutions is long overdue, and may provide some insights into the progressions and acceptance of environmental education over the last 18 years. Towler and Francis (1980/81) predicted that Canada should witness a slow but deliberate growth in environmental education through the 1980s. The following study was an attempt to ascertain the changes that have occurred in pre-service teacher education programs since Towler's study.

## Present Study: Methodology

Utilizing a survey research design, the current study was a repeated measure of Towler's (1980/81) study. The study was a census of all teacher preparation institutions, in that all the provincial institutions offering pre-service teaching programs were included in the survey. Because this study attempted to assess the current status and nature of environmental education in pre-service teacher programs and to make comparisons to Towler's findings, a modified version of Towler's postal questionnaire was used to obtain data for the study. In this way, standardization of the instruments in the two studies (Towler's and the current study) is achieved.

Data collection was conducted from March to May of 1996. The procedures in this current study closely followed Towler's study in order to maintain an integral basis for comparison. This attempt to minimize methodological variability in the two investigations added to the validity and reliability of this longitudinal study. Consequently, questionnaires with letters of introduction and self-addressed return envelopes were sent to the 45 Deans or Education Department Heads of the teacher preparation institutions. These Deans or Department Heads were assumed to be best able to select the respondent(s) most capable of providing the necessary information for the survey in her/his respective institution. The total number of institutions that responded to the survey questionnaire was 35 (77.8%). Follow-up mailing procedures and repeated attempts to contact nonrespondents via the telephone were employed in order to increase the number of respondents. However, the majority (7 or 70%) of the nonrespondents were unavailable for telephone interviews during the time of the study. The other three nonrespondents revealed that they were either not interested in the survey topic or that their institutions did not offer environmental education programs.

Subsequent to the data collection process, the responses were coded and the numerical data analyzed, yielding frequencies and percentages for each question item. The present study utilized analytical strategies similar to those used by Towler in order for comparative analyses to be conducted.

### Findings: The Present Status and Progress of Environmental Education at the Teacher Preparation Level

#### *The Number and Type of Environmental Education*

[a] As shown in Table 1, only 12 or 34.3% of the respondents indicated that their institutions offered separate environmental education methodology courses in their institutions in the current study. However, although the majority of the institutions (23 or 65.7%) were reported as not offering environmental education as a separate methodology course, six (26.1%) of these reported institutions provided environmental education as an integrated

part of other courses in teacher education. These six respondents indicated that environmental education was generally incorporated as part of a methodology course for general sciences (4 or 67.7%) or social sciences (3 or 50.0%). Consequently, 18 or 51.4% of the reported institutions surveyed in the current study offer environmental education as a methodology course or as part of another course in their pre-service teacher education programs.

These results from the current study, when compared to Towler's findings, indicate that the number of institutions offering environmental education methodology courses to prospective teacher across the nation has remained relatively stable over the last 18 years. Towler reported that in the 1978-79 academic year, 18 or 43% of the institutions offered methodology courses in environmental education and 1104 students were registered in such courses. Similarly, in the present study, 18 or 51.4% of the reported institutions offer environmental education either as a methodology course or as part of another course in their teacher preparation programs with a student enrollment of 1166. These findings reveal that a large number of Canadian teacher training institutions, whether in the present or the past (48.6% in the current study and 56.1% in Towler's investigation), did, and still do, *not* offer environmental education methodology either as a separate or integrated part of another course.

Category	Count	Percent of Cases
Institutions offering environmental education	12	34.3
Institutions <i>not</i> offering environmental education	23	65.7*
<b>Total</b>	35	100.0

Table 1. Number of provincial institutions offering environmental education methodology courses. (\*Six (26.1%) of the 23 institutions indicated that environmental education was integrated as part of other courses offered to pre-service teachers).

[b]. When the respondents in the current study were asked to identify courses other than methodology courses that dealt with ecology or environmental concerns for prospective teachers in their institutions, only 12 or 34.3% of the 35 institutions were reported to offer such courses. The majority of the 35 institutions (21 or 60.0%) did not offer such courses. In addition, only 10 or 28.6% of the institutions in the present study were reported to offer prospective teachers a sequence of courses leading to a form of specialization such as major and/or minor in environmental education. The majority of the reported institutions (25 or 71.4%) did *not* offer courses leading to an environmental education specialization.

The evidence from the present study and Towler's enquiry suggests that the number of teacher training institutions offering non-methods courses pertaining to ecology or environmental concerns has decreased over the last 18 years. Towler reported that in his investigation, 25 or 60% of the institutions offered courses dealing with ecology and environmental concerns and

issues. In the present study, the number of institutions offering such courses declined to 12 or 34.3%.

*The Major Area of Emphasis in Environmental Education*

When asked to indicate the curricular subject areas instructors included and emphasized in their environmental education methodology courses in the present study, the majority reported that they focused on ecology, conservation, outdoor education, biology, and global issues. To a lesser degree, economics and geographical topics were emphasized in the methodology courses. The areas least emphasized were politics and sociology (Table 2).

Over the 18 year period, it appears that ecology and outdoor education remain as two of the major areas of emphasis of environmental education methodology courses. Similar to the results from the present study, Towler reported in his investigation that the subject areas that ranked as the top three most commonly emphasized in environmental education methodology courses were ecology, outdoor education, and biology (ranked first, second, and third, respectively). The area of conservation education which was ranked fifth in Towler’s study and second in the present study has emerged as one of the major focal areas of methodology courses in recent years.

<b>Area of Emphasis</b>	<b>Rank Order</b>
Ecological	1
Conservation	2
Outdoor Education	3
Biological	4.5
Global Issues	4.5
Geographical	6.5
Economical	6.5
Sociological	8.5
Political	8.5
Integration of Environmental Education	9
Principles of Environmental Education	10.5
Environmental Education Issues	10.5

Table 2. Rank order of major curricular area emphasis in environmental education methodology courses ( $n = 12$ ).

*The Number, Qualifications, Involvement, and Knowledge of Faculty Members who Participate in Environmental Education at the Pre-service Teaching Level*

[a]. In the 1995-96 academic year, the respondents reported that there were 26 environmental education instructors employed on a full-time basis, while 34 of the instructors taught on a part-time basis. The majority of these 60 instructors held degrees in education (32 or 53.3%) and in the field of biology (24 or 40.0%) in the present study (see Table 3).

Degree Fields	Count	Percent of Cases
Education	32	53.5
Biology	24	40.0
Environmental Science/Studies	7	11.7
Ecology	5	8.3
Geography	5	8.3
Chemistry	1	1.7
Engineering	1	1.7
Geology	1	1.7
<b>Total</b>	76*	126.9*

Table 3. Frequency distribution of the academic qualifications of environmental education faculty members ( $n = 60$ ). (\*Figures total greater than 60 faculty members and 100% due to more than one response being possible for each faculty member).

Towler indicated, at the time of his investigation, that there were 33 full-time and 31 part-time faculty members teaching environmental education (giving a total of 61 instructors). The findings from the studies suggest that the number of faculty members teaching environmental education courses in 1996 was comparable to the number of environmental education instructors teaching at the pre-service teacher level 18 years ago. In terms of academic qualifications, the results of the two studies make evident that the majority of the faculty members teaching environmental education have consistently been academically prepared in the fields of education and biology over the last 18 years. Comparable to the findings in the current study, in the 1975-76 academic year, 21 or 34% of the faculty members held degrees in education while 11 or 18% of the instructors possessed biology degrees. Likewise, the number of faculty members with degrees in environmental education have remained relatively low across the nation, with 5 or 8% of the faculty members possessing degrees in environmental education in Towler's investigation while seven or 11.7% of the instructors had degrees in Environmental science/studies in the current study.

[b]. The level of participation among faculty members involved in environmental education projects such as funded projects, development of curriculum materials, and research concerning environmental education has remained low over the 18 year period. Towler revealed that only five or 8% of the faculty members participated in funded projects and fewer than 3% or two faculty members were involved in curriculum materials design at the time of his investigation. Comparable to this low participation rate, the current study indicated that only 13 or 21.7% of the faculty members were actively involved in environmental education funded projects and research. Similarly, fewer than 29% or 17 faculty members were participating in environmental education curriculum design in the current study. Generally, over 70% of the faculty members were *not* involved in environmental education projects other than teaching pre-service teachers' courses in both the current study or in Towler's study.

Categories of Projects	Number of EE Faculty Members Involved	
	Count	Percent of Cases
Number of funded EE projects	13	21.7
Development of EE curriculum materials	17	28.3
Development of EE for K-12 school use	16	26.7
Research in EE	13	21.7
<b>Total</b>	59*	98.4*

Table 4. Frequency distribution of faculty members involved in environmental education projects ( $n = 60$ ). (\*Figures total less than 60 and 100% due to three missing responses).

Categories of Projects	Existence of Involvement Among Faculty Members		Total*
	Yes (%)	No (%)	
Number of funded EE projects	12 (37.5%)	20 (62.5%)	32
Development of EE curriculum materials	13 (40.6%)	20 (59.4%)	32
Development of EE for K-12 school use	11 (32.4%)	22 (67.6%)	34
Research in EE	10 (28.6%)	22 (66.7%)	33

Table 5. Frequency distribution of faculty members involved in environmental education projects according to the number of institutions ( $n = 35$ ). (\*Figures may be less than 35 due to three missing responses.)

[c]. In an attempt to measure how knowledgeable faculty members were about exemplary environmental education projects in their geographical region, respondents in the present study were requested to identify the names of such notable environmental education programs and/or projects. Only 12 or 34.3% of the respondents from each institution could list the name of such environmental education programs and/or projects. Conversely, just over 65% of the respondents could not identify exemplary cases in their geographical location.

These results when examined with Towler’s findings indicate that, in general, the number faculty members who are knowledgeable about exemplary environmental education projects in their geographical region still remains relatively low, although there has been some improvements over the 18 year period. More than 78% of the faculty members in Towler’s investigation and over 65% of the faculty members in the current study could not provide the name of exemplary environmental education programs in their region.

### *The Place of Environmental Education in K-12 Schools*

In determining how environmental education was incorporated into schools at the elementary and secondary levels, respondents were requested to identify the subject area categories into which environmental education was integrated based on their previous experiences and observations in the schools within their geographical area in the current study. As shown in Table 6, in general, environmental education was reported to be most commonly



incorporated as part of science courses at both the elementary and secondary school levels (82.9% and 77.1%, respectively) in 1996. Social studies was identified as the next frequently observed subject area into which environmental education was integrated into the elementary (51.5%) and secondary (25.7%) curriculum. Similarly, respondents reported that environmental education was also commonly observed as being taught throughout the school curriculum at the elementary (40.0%) and secondary (28.6%) level.

Subject Area Categories	Observations of EE incorporation into School Subjects					
	Elementary Level		Secondary Level		Both Elementary & Secondary Levels	
	Count	Percent of Cases	Count	Percent of Cases	Count	Rank Order
Science	29	82.9	27	77.1	56	1
Social Studies	18	51.4	9	25.7	27	2
EE integrated throughout	14	40.0	10	28.6	24	3
Geography	4	11.4	9	25.7	13	4
EE as a separate course	1	2.9	10	28.6	11	5
Technology	4	11.4	6	17.1	10	6
EE not seen at all	5	14.3	1	2.9	6	7
Others	1	2.9	2	5.7	3	8
<b>Total</b>	197.2*	197.2*	74*	211.4*		

Table 6. Frequency distribution and rank order of environmental education integration into subject areas at the elementary and secondary school levels. (\*Figure exceeds 35 and 100% due to more than one response possible from respondents for each category.)

Other frequently mentioned areas of environmental education integration included geography and technology, at both school levels. However, rather than viewing environmental education as a component of other subject areas, one respondent noted that environmental education was seen as a separate course at the elementary level while 10 or 28.6% of the respondents recounted that separate environmental education courses were offered to secondary students. In contrast, five or 14.3% of the respondents observing elementary schools and one or 2.9% respondent observing secondary schools indicated that they had not viewed any active incorporation of environmental education into the school system in their region.

These results appear to support Towler's findings. That is, in general, environmental education has been observed to most commonly incorporated as part of science and social studies courses in elementary and secondary schools over the last 18 years. Environmental education was seen by 33 or 80% of the faculty members to be included as part of science courses while 22 or 54% of the faculty viewed environmental education to be incorporated as part of social studies in Towler's investigation. However, one notable change that has occurred in the last 18 years is the number of elementary and secondary schools offering environmental education as integrated throughout all school subjects. In the current study, faculty members mentioned that environmental education was commonly observed as being taught throughout the

school curriculum at the elementary (40.0%) and secondary (28.6%) school level. Towler did not mention observing environmental education being offered as integrated throughout all school subjects.

*Teacher Certification in Environmental Education in Pre-service Teacher Programs*

In the current study, more than half (18 or 51.4%) of the faculty members indicated that they would be opposed to instituting teacher certification of environmental education in their institutions, while 12 or 34.3% of the faculty members would support such actions. The majority (8 or 44.4%) of the faculty members against teacher certification in environmental education reasoned that they did not support any form of specialization or fragmentation in pre-service teacher programs. Rather, these respondents believed that environmental education should be integrated into the entire pre-service teacher program. Conversely, the majority (6 or 50%) of the faculty members in favour of teacher certification in environmental education believed that certification would provide perceived importance and recognition to the environmental education field among education community. Five or 14.3% were undecided on this issue of teacher certification (see Table 7).

Compared to 18 years ago, when environmental education educators were evenly divided on the issue of teacher certification in the area of environmental education, the majority of environmental education educators today tend to oppose teacher certification in environmental education. In contrast to the findings in the current study, Towler reported that 17 or 41% of the environmental education educators were in favour of teacher certification in this area while 15 or 37% of the educators were against such certification in his investigation.

Category	Count	Percent of Cases
In favour of EE certification	12	34.3
Against EE certification	18	51.4
Undecided	5	14.3
<b>Total</b>	35	100

Table 7. Frequency distribution of respondents' desirability of teacher certification in environmental education (n = 35).

*The Importance of Environmental Education in Pre-service Teacher Programs<sup>1</sup>*

In the current study, respondents were requested to rate the importance of environmental education relative to the other required courses offered to prospective teachers using three Likert-type items ranging from "top priority" to "low priority." As indicated in Table 8, the majority (48.6%) of the respondents viewed environmental education to be low in priority when compared to other subjects offered to pre-service teachers. However, eight or 22.9% of the

respondents reported that their institution looked favourably on environmental education and rated environmental education as a high priority in teacher training programs. One respondent from this group also mentioned that although he had rated environmental education to be of great importance, he also considered other components of the teacher pre-service program to be equally important.

For those institutions that did not offer methodology courses in environmental education, respondents of the 23 institutions were asked if there were future plans for implementing environmental education courses into their respective pre-service teacher training programs. Overwhelmingly, 17 or 73.9% of the respondents indicated that their institution had no such plans in the near future. Only two or 8.7% of the faculty members reported that their institutions had plans for inclusion of environmental education courses in their teacher preparation programs in the near future.

Category	Count	Percent of Cases
Top priority	8	22.9
Medium priority	10	28.6
Low priority	17	48.6
<b>Total</b>	35	100.1

Table 8. Frequency distribution of the relative importance of environmental education in teacher preparation institutions.

#### *The Barriers/Major Problems in Teaching Environmental Education*

When respondents in the present study were asked to determine the major problems concerning the teaching of environmental education courses in their institutions, the most commonly identified barrier to implementing environmental education was the lack of financial support. Over half (51.4%) of the respondents described fiscal restraints in recent years as one of the major obstacles in promoting and developing environmental education courses in their institution.

As shown in Table 9, 13 or 37.1% of the respondents classified time and space constraints in the existing pre-service teacher training programs as the next most common barrier to the implementation of environmental education courses. Some of these respondents explained that many of the programs were already full and there may be problems associated with integrating another subject into the existing programs. Part of these problems stem from attitudinal barriers, as indicated by 31.4% of the respondents. Many of these respondents reasoned that many of their administrators and peers view environmental education as a “frill” subject and that implementation of such a “fringe” course into an already strained pre-service teacher curricula was difficult to justify. As one respondent wrote: “Environmental education is often mentioned along with Theatre Arts (drama education) as ‘a frill course’ . . . and most of the faculty are too tied to the narrow traditional curricula.”

Category	Count	Percent of Cases	Rank
Inadequate funding	18	51.4	1
Lack of time/space in pre-service teaching programs	13	37.1	2
Lack of administrative/faculty support for EE in programs	11	31.4	3
No demand/mandate/interest of EE in institutions and/or schools	10	29.0	4
Inadequate teaching materials and equipment	9	25.7	5
Inadequate texts for teachers	7	20.0	6.5
Lack of Canadian content in materials	7	20.0	6.5
Lack of EE instructors in institutions	6	17.1	8.5
Inadequate texts for K-12 schools	6	17.1	8.5
Lack of research	5	14.3	10.5
Lack of communication among EE educators	5	14.3	10.5
EE is only offered in the summer	1	2.9	11.5
No major problems	1	2.9	11.5
<b>Total</b>	99*	283*	

Table 9. Frequency distribution and rank order of respondents' perceived barriers to implementing environmental education courses. (\*Figures total greater than 35 and 100% due to more than one response possible from respondents for each category.)

Although the problem of fiscal restraints in environmental education remains unchanged from 18 years ago, the lack of communication among environmental education educators no longer ranks as a primary problem. In his investigation, Towler indicated that the main factors that hindered the teaching of environmental education in Canada were the absence of funding and the lack of communication among Canadian environmental education educators.<sup>2</sup> In the recent study, "lack of communication" was only mentioned by five or 14.3% of the faculty members as a common problem in promoting environmental education. In addition, rather than viewing inadequate teaching materials/texts/resources as major barriers in incorporating environmental education in teacher preparation programs, many faculty members in recent years tend to identify logistical constraints and attitudinal barriers as more compelling factors.

## Summary

*The number of Canadian teaching institutions offering environmental education courses to pre-service teachers has remained low for nearly two decades. Despite the call during several UNESCO-UNEP international conferences for better preparation of teachers as one of the primary concerns in the environmental*

education field, the survey in this study has revealed that the preparation of pre-service teachers currently remains at an inadequate and underdeveloped level in Canada. At the time of the current study, only 12 out of the 35 institutions surveyed offered separate environmental education methodology courses while another six institutions reported that they integrated aspects of environmental education into other methodology courses, primarily in the more traditional areas of science and social studies. Moreover, the number of teacher preparation institutions offering courses pertaining to ecology or environmental concerns has declined in the last 18 years. The result is that over 65% of the teacher training institutions surveyed do not offer either environmental education courses and/or specialization programs for environmental education. This indicates that the provision of environmental education within teacher preparation programs has remained relatively unchanged for nearly two decades, despite the increasing commitment to teacher preparation in environmental education at important international conferences. The distance between repeated declarations prioritizing environmental teacher education in international policies and the resistance to practical implementation of adequately developed programs appears to be widening.

*Pre-service environmental education courses tend to emphasize ecology, conservation education, outdoor education, and biology.* The traditional forms of environmental education—ecology, conservation, outdoor education, and biology—were commonly found to be the major emphasis in the majority of recent methodology courses across the nation. In general, the resurgent popularity in conservation education, contrasting with the lack of political and sociological issues in environmental methodology courses, suggest that environmental education is still being viewed as narrowly focusing on knowledge, skills, and awareness about natural resources and their management and has not widened or deepened to an understanding of environmental education that includes socio-economic or political aspects of society. Because environmental education appears to be about the environment and primarily taught within the context of science and social studies courses, there is a danger of uncritically accepting, legitimizing, and perpetuating scientific, “technical” solutions to environmental problems (Robottom, 1983). Although education *about* the environment is valuable, in that it is strong in providing environmental knowledge and skills, the major concern and danger is that the majority of teacher training institutions provide and prepare pre-service teachers with only this partial view of environmental education—one that is rationalist, technocratic, and ignores the socially critical and political action purposes of environmental education.

*Overall, pre-service teachers continue to receive much of their environmental education training from faculty members who (a) possess degrees in education and biology and (b) have low levels of participation in environmental education projects and research.* Many of the environmental education courses offered to prospective teachers in most of the teacher training institutions are

located in science departments. Because environmental education courses are predominantly taught by science specialists rather than environmental educators, the major emphasis in courses related to environmental education is on scientific ecological principles and concepts. Generally, the majority (over 70%) of the instructors working with pre-service teachers are not actively involved in curriculum development and design, or engaged in research in environmental education. Furthermore, most of the instructors surveyed were unable to provide names of exemplary environmental education projects in their geographical region. In addition, because teacher educators appear to lack adequate knowledge and skills in teaching about differing conceptions and ideologies of environmental education, expectations for change, innovations, and progress in the field will continue to be low and slow.

*Generally, environmental education in Canada has not progressed greatly in the last two decades. Environmental education continues to be a low priority in K-12 schools and teacher preparation programs.* Many of the problems associated with the preparation of pre-service teachers in Towler's study conducted in the early 1970s remain relatively unchanged in the current study. Environmental education is still generally regarded as a low priority in the training of effective pre-service teachers in Canadian institutions. Few, if any, current teacher training programs in Canada adequately and effectively offer courses to pre-service teachers that foster the understanding and skills necessary to teach the goals of environmental education to school grade students. Environmental education remains at the fringe of most pre-service teacher training programs and the prospects of significant environmental education program implementation appears dim. Overall, even those few teachers who are currently receiving environmental education are not effectively prepared because they appear to be receiving only a narrow view of environmental education. Furthermore, environmental education is usually incorporated as part of the science or social studies curricula in the very few K-12 schools that offer environmental education.

*The low-standing status of environmental education at the pre-service teacher level will continue to persist unless the following major barriers are addressed: barriers in institutional practices and organizations, barriers at the faculty level, and barriers encountered by instructors of pre-service teachers.* Environmental education clearly is not a priority at any level within the Canadian educational system and the continual absence of adequate support and funding for environmental education severely hampers the development and conduct of research, methodologies, curricular resources materials, and the number of professionals involved in the field. The inflexible scheduling and arrangement of discipline-dominated organizations of many current teacher training institutions militate against the interdisciplinary, problem-solving, critical action aims of environmental education. At the faculty level, there appears to be a general lack of awareness, interest, commitment, direction, and leadership in implementing environmental education in

teacher education programs. Environmental education often suffers from a lack of academic respectability among faculty members and, in many cases, there is an absence of individuals employed on a full-time basis who are devoted to the long-term design, promotion, and preparation of a system to effectively instruct pre-service teachers in environmental education.

### Limitations

This survey study was significant in providing evidence that there is a general pattern of inattention to environmental education in pre-service teacher preparation programs across Canada. Replication of this study in the future will gauge and reveal the development and progression of the field across the nation and identify areas for reform and innovation for administrators and researchers on a national and international level.

However, modifications of the procedures may be considered in replicating this study. The findings of this study revealed that most pre-service teacher education programs that offer courses entitled “environmental education” focus on areas such as ecology, conservation education, outdoor education and biology rather than addressing sociological and political issues. It may be possible that other existing courses such as global education and geography methodology in the pre-service teaching programs across the nation are presently addressing issues that link the environment to social justice, economics, gender, and political literacy. Thus, some existing programs across the country may be already providing prospective teachers with opportunities to develop moral and political awareness as well as the concepts, values, skills, and commitment that support a global perspective and democratic methods of decision-making and problem-solving. For instance, environmental education may be taught as non-methods studies to prospective teachers who are enrolled in combined degree programs not identified as “teacher education” courses. In order to uncover and determine whether environmental education is housed under other courses that are not labelled “environmental education,” it may be worthwhile to identify respondents who teach courses that include any number of dimensions and forms of environmental education to prospective teachers. In this way, a broader, more complete picture of environmental education in pre-service teachers programs may be painted and understood.

### Notes

- <sup>1</sup> Towler did not include this question in his investigation.
- <sup>2</sup> According to Towler (1980/81), “lack of communication” was defined as “there was no organized way to disseminate information related to environmental education” (p. 15).

## Notes on Contributor

**Emily Lin** is Assistant Professor in the Department of Curriculum and Instruction at the University of Nevada, Las Vegas. Currently, she conducts research in the area of teacher education and is an evaluator for a number of grants that focus on the improvement of science instruction. In addition, she facilitates learning among pre-service and in-service teachers from all disciplines.

## References

- Bueth, C. & Smallwood, J. (1987). Teachers' environmental literacy: Check and recheck, 1975 and 1985. *Journal of Environmental Education*, 18(3), 39-42.
- Childress, R.B. (1978). Public school environmental education curricula: A national profile. *Journal of Environmental Education*, 9(3), 2-12.
- Fien, J. & Rawling, R. (1996). Reflective practice: A case study of professional development for environmental education. *Journal of Environmental Education*, 27(3), 11-20.
- Gigliotti, L.M. (1990). Environmental education: What went wrong? What can be done? *Journal of Environmental Education*, 22(1), 9-12.
- Hooper, J.K. (1988). Teacher cognitions of wildlife management concepts. *Journal of Environmental Education*, 19(3), 15-18.
- Hungerford, H.R., Peyton, R., & Wilke, R.J. (1980). Goals for curriculum development in environmental education. *Journal of Environmental Education*, 11(3), 42-47.
- Knapp, D. (2000). The Thessaloniki declaration: A wake-up call for environmental education? *Journal of Environmental Education*, 31(3), 32-39.
- Lucko, B.J., Disinger, J.R., & Roth, R.E. (1982). Evaluation of environmental education programs at the elementary and secondary school levels. *Journal of Environmental Education*, 13(4), 7-12.
- McClaren, M. (1989). Developing environmental literacy: The critical element of liberal education for the 21st century. *Education Manitoba*, 16(5), 10-12.
- National Environmental Education Advisory Council. (1996). *Report assessing environmental education in the United States and the implementation of the National Environmental Education Act of 1990*. Washington, DC: U.S. Environmental protection Agency Environmental Education Division.
- Rioux, J.C. (1973). *Environmental education in primary and secondary schools in Canada*. Ottawa: Environment Canada.
- Robitaille, J. & Sauvé, L. (1990). *L'éducation relative l'environnement l'école primaire et secondaire au Québec: état de la situation*. Research report to the Ministère de l'Environnement du Québec (p. 140). Québec: Service de l'éducation et de la formation.
- Robottom, I. (1983). Science: A limited whole for environmental education? *Australian Science Teachers' Journal*, 29(1), 27-31.



- Sauvé, L. & Boutard, A. (1991). Environmental education in Quebec: Time for concerted action. *European Journal of Education*, 26(4), 347-355.
- Schwaab, K.E. (1975). *A survey of the effectiveness of environmental education teaching methods as rated by public school teachers and professors of education in Illinois*. Southern Illinois University. Dissertation Abstracts, 36(12), 7752-A. UMI 76-13, 286: 210.
- Simmons, D.A. (1987). The teacher's perspective of the resident environmental education experience. *Journal of Environmental Education*, 19(2), 35-42.
- Simpson, P.R., McLaughlin, J., Volk, T., & Hungerford, H. (1989). A survey concerning teachers' perceptions of the importance of SRSI issues. *Journal of Environmental Education*, 21(1), 31-37.
- Smith-Sebasto, N.J. & Smith, T.L. (1997). Environmental education in Illinois and Wisconsin: A tale of two states. *Journal of Environmental Education*, 28(4), 26-36.
- Stapp, W.B., Caduto, M.J., Mann, L., & Nowak, P.F. (1980). An analysis of pre-service environmental education of teachers in Europe and an instructional model for furthering this education. *Journal of Environmental Education*, 12(2), 3-10.
- Tilbury, D. (1992). Environmental education within pre-service teacher education: The priority of priorities. *International Journal of Environmental Education and Information*, 11(4), 267-280.
- Tilbury, D. (1994). An international development of environmental education: A basis for a teacher education model? *International Journal of Environmental Education and Information*, 13(1), 1-20.
- Towler, J.O. (1980-81). A survey of Canadian pre-service training in environmental education. *Journal of Environmental Education*, 12(2), 11-16.
- Towler, J.O. & Francis, G. (1980-81). Observation o the current status of environmental education in Canada, part II: Environmental education at post-secondary levels in Canada. *Journal of Environmental Education*, 12(2), 17-19.
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). (1980). *Environmental education in the light of the Tbilisi Conference*. Paris: UNESCO.
- UNESCO. (1997). *Educating for a sustainable future*. (UNESCO Publication No. DPD-97/CONF.401/CLD.1). Paris: UNESCO.
- United Nations Educational, Scientific, and Cultural Organization-United Nations Environment Program (UNESCO-UNEP). (1988). *International strategy for action in the field of environmental education and training for the 1990s*. Paris: UNESCO-UNEP.
- Wilke, R.J. (1985). Mandating pre-service environmental education teacher training: The Wisconsin experience. *Journal of Environmental Education*, 17(1), 1-8.
- Wilke, R.J., Peyton, R.B., & Hungerford, H.R. (1987). *Strategies for the training of teachers in environmental education*. Paris: UNESCO.