

WITH THE FINANCIAL SUPPORT OF THE COMMISSION

Environmental Education
into
Initial Teacher Education
in Europe

E E I T E

'The State of the Art'

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[Editors]

Environmental Education into Initial Teacher Education in Europe

E E I T E

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INTRODUCTIONS

To develop awareness and responsibility of the citizens in order to ensure protection of the environment and its resources within sustainable development, EDUCATION has to play an essential part.

DG XI General Directorate for Environment keeps helping the Member States projects ready to implement the principles of the 1988 Resolution about environmental education.

Among priorities, teacher training is expected to develop as a follow-up of national experiences through an European dimension.

This is the contribution of the ATEE sub-group (EEITE) focussing on initial training about environment and trying to open the way to other trainers in Europe.

Afin de développer la prise de conscience et la responsabilité des citoyens pour la protection de l'environnement et de ses ressources dans un développement durable, l'EDUCATION a un rôle essentiel à jouer.

La DG XI, Direction Générale de l'environnement soutient des projets présentés par les Etats Membres dans le cadre de la mise en oeuvre des principes de la Résolution de 1988 sur l'éducation en matière d'environnement.

Parmi les priorités d'action, la formation des enseignants devrait, à partir des expériences nationales, s'inscrire dans un cadre de dimension européenne. C'est un projet de telle dimension que propose le sous-groupe EEITE de l'ATEE en développant l'intégration de l'environnement à la formation initiale espérant ainsi ouvrir de nouvelles voies pour les formateurs européens.

Gisèle Vergnes, DG XI, direction C 4

This is the first publication of the ATEE WG on environmental education which started its activities two years ago. This group has been very active and all the members have to be congratulated with their work over so short a period. Their work and activities have been enhanced by the financial support DG XI of the Commission is giving to their project to develop modules to introduce environmental education into initial teacher education. Hence ATEE expresses its gratitude towards the Commission for the confidence and support put into the WG on environmental education.

Yves Beernaert, Executive Director ATEE

Section One

Background and Rationale

The need for coherent programmes of environmental education in all aspects and in all phases of education systems across the European Union (EU) has been argued strongly and persuasively by the Commission, the Council of Ministers, and the European Parliament, and has been supported by member states. However, nowhere yet across the EU has environmental education been introduced in a consistent or coherent fashion into pre- or in-service teacher education programmes. Although a range of factors are at work here (see Section Two), the lack of a commonly understood and agreed pedagogical-didactical basis to this aspect of the curriculum, and the concomitant lack of teaching/resource materials, may be seen as a major contributory factor to this lack of consistency and coherence. As a consequence, opportunities for broad pan-European developments in this essential area are constrained.

Arising from this realization and from development work carried out under the auspices of the Association of Teacher Education in Europe (ATEE) relating to pre-service courses, a proposal was made to the Commission's DG XI for a development project which would directly address these issues. Thus, following initial discussions through the ATEE network and with DG XI in early 1993, EEITE came into existence in the Autumn of that year.

Goals and Purposes

The prime objective of the EEITE project is the 'co-ordinated development of teaching units to be used in teacher education, aimed at the preparation of teachers for environmental education in primary, secondary and vocational education'. Specifically, the project is setting out to:

- carry out an inventory of current practice in pre-service teacher education programmes (primary, secondary and vocational) across member states;
- review implementation strategies in environmental education in each country, and their relation to pre-service courses;
- develop a strategy to implement environmental education into pre-service courses in each EU country, taking account of: phase, curriculum constraints, course organization, current practice;
- establish criteria whereby implementation strategies can include issues relating to conceptions, values, and action taking.

The following table summarizes desired outcomes of the project:

Outcomes	• a bank of evaluated environmental education materials of use in institutions across the EU where pre-service teacher education programmes are offered • insights into the management of change across departments of education • clarification of practicable and appropriate pedagogy and learning outcomes associated with environmental education and pre-service courses • experience of working together across the EU, refining the co-operative process
Materials	• need to be flexible, non-prescriptive, and non-directive, but must facilitate penetration into existing initial teacher education programmes and/or school • should confer <i>additionality</i> by enhancing the teacher education process itself
Modules	• will emerge from the project, and are means of interpreting or presenting project materials within an institution. A module is an 'enabling frame' which facilitates delivery of environmental education objectives by means of the materials.

Project Organization

The project is based around the work of Country Project Representatives (CPRs) in eleven EU countries. The work of the project began with an initial meeting of CPRs, together with a group of environmental education experts drawn from across Europe, in the project's first 'Summer University' in Brussels in October 1993.

This meeting stimulated developmental activities within each of the eleven institutions of initial teacher education represented in the project. These activities have been reported and shared in the second project conference in Santiago de Compostela in July 1994. An interim report of progress will be made to DG XI in the autumn of 1994.

Operational Principles

The following is a summary of the principles which underpin the project's work:

- 1 The purposes of the project are directly related to the aims of DG XI of the European Commission.
- 2 The project recognizes that the practice and organization of pre-service teacher education across the EU is varied, reflecting distinctive aspects of national education organization and philosophy. In some member states, there is also distinct regional variation which reflects particular traditions and ways of working.

For this reason and for others, for example those relating to autonomy and subsidiarity, the project is not able to be prescriptive about either the content of a programme of study relating to environmental education, or any implementation strategies which colleagues across the EU might employ.

However, the project feels strongly that there *are* a number of organizing principles underpinning its work, and that these need to constitute common ground amongst everyone involved across the EU. These are set out below.

- 3 The following organizing principles are common ground within the project :
 - The broad purpose of the project's contribution to pre-service teacher education programmes is that novice teachers should be both willing and able to make a contribution to environmental education through their own work with learners; *willing* in a sense that they understand the importance of environmental education and have a personal commitment to it which is both practical and intellectual; *able* in a sense that they have a repertoire of management of change and curriculum innovation strategies upon which they can draw in co-operation with others.
 - The project recognizes the ambitious nature of this aim, but feels that it is important to be clear about its priorities. It is also aware that pre-service programmes are only a beginning and that continuing professional development is required if the goals of environmental education are to be achieved.
 - In order to achieve this purpose, the project believes that it is necessary for pre-service programmes to contain two *elements*. For the sake of clarity these elements are listed here separately. This should not be taken to mean that the project sees these as necessarily separate in practice; rather, the project wishes to give co-ordinators and CPRs the responsibility of deciding the inter-relationships between these (and other) elements for themselves – and for determining patterns of organization and support their development work will have. Rather than stifle innovation here, the project would wish to encourage necessary diversity and to monitor practice in order to gain insights into the transferability of particular approaches and programme designs.

The two elements are:

- a consideration of the aims and practice of environmental education, particularly as it relates to compulsory schools; an examination of curriculum practice and extra-curriculum opportunities and the desired learning outcomes associated with these; the identification of these characteristics which mark out curriculum activity as contributing to environmental education; an exploration of particular strategies and approaches which can be employed in environmental education.
- practice in environmental education; working with teachers and children in schools on suitably small-scale activity; evaluating this practice and building on foundations laid through reflection and systematic planning; in particular, evaluating the effects of this practice on both their own and children's awareness of the possibilities and priorities of environmental education.

As a postscript, the project wishes to emphasise the incremental and iterative nature of such developments, and the consequent necessity of taking a small-step approach, coupled with a focus on the management of intervention and change.

Project Characteristics

Developmental projects within each participating institution will have the following characteristics:

- a local focus, drawing from, and contributing to, expertise and awareness in the local community;
- integration in initial teacher education programmes, rather than being an addition;
- a clear set of aims and desired learning outcomes, which are related both to the purposes of EEITE and to the goals of the pre-service programme of the institution involved;
- action-oriented, in that student teachers will be involved in the planning, implementation and evaluation of the project, and will be encouraged to have an individual commitment to reflection so as to build the experience into their own professional development;
- values and attitude development are key features of the project;
- processes and outcomes of the project are such that they can be shared by other institutions and by other members states
- an interdisciplinary approach, involving more than one subject area or curriculum focus;
- a dual focus, in which tutors and teachers work with novice teachers, who for their part work with students in school.

Future Developments

A second phase of EEITE (1994/95) is planned. This includes the development of the project within the 'home' institution so that, for example, more students and/or tutors become involved and the studies are carried out in greater depth, or extended to new aspects. As well as this, bi- and tri-lateral co-operation projects between between CPRs have been planned in order to extend the project's awareness and understanding of specific development issues (eg values and conceptions), and appropriate methodologies for evaluation and management of change strategies. The extent to which these are possible depends on the funding available.

Section Two

Diversity and Opportunity – Reflections on Environmental Education within Initial Teacher Education Programmes Across the European Union

WAH Scott
University of Bath

Introduction

Literature on the organization of initial teacher education courses, and on the place of environmental education within pre-service programmes suggests that considerable diversity of practice should be expected across institutions, and that such diversity would be increased because a number of countries are involved. Specifically, it is likely that this would be manifest in terms of diversity of:

- *organization* of initial teacher education;
- *practice* in terms of working with students;
- the *interpretation* of environmental education;
- a *readiness* and *ability* to incorporate environmental education issues within courses;
- *opportunity* to deliver environmental education goals.

Experience suggests that these would be inevitable outcomes of a range of factors which are to do with both environmental education and initial teacher education. Such factors would include:

Initial Teacher Education	Environmental Education
• the nature of pre-service provision (if any) • the number of alternative pathways to qualified teacher status (QTS), and • the roles universities have in these • national frameworks and arrangements for course scrutiny and approval • the influence of school curricula on initial teacher education courses • the freedom tutors have in delivering curricula	• its significance within any agreed (national) school curriculum • any consensus about its national importance • the degree of convergence of view about desired goals for environmental education • the interest and awareness levels of course managers and tutors, and their skills and competences in this area • links between NGOs and initial teacher education courses • national policies and imperatives

Evidence from the work of institutions within the EEITE project shows that this anticipation of diversity was not misplaced.

Conceptualizing Diversity

It is possible to conceptualize diversity as not only having multiple origins, causes and drives, but also as being *multi-layered*. The remainder of this section will explore this notion in the context of information provided by project members about initial teacher education and environmental education provision in their countries.

Layer 1 – National circumstances

The ultimate in diversity is to have some countries with no or minimal initial teacher education provision as, for example, for secondary schools in Greece. Here, although there are some optional

and limited education modules available in *degree* courses, and a three-month pre-employment training programme, there is no formal statutory teacher education course. A similar situation is found in Italy where there are didactics workshops within some degree courses, and a national competitive examination; but, again, no teacher education course, *per se*. In both countries, there *are* formal primary teacher education courses. This is in contrast to most other countries, across the European Union, where entry to the profession is structured and controlled, albeit to varying and contrasting degrees. For example, in France there is a national competitive examination which *follows* a teacher education course.

Present arrangements for initial teacher education across the European Union have not emerged overnight, but have evolved over many decades. That evolution continues and many countries find themselves in a period of renewed change; Spain and Italy being good examples of this. There are also distinct cultural influences on courses which owe much to national priorities and preoccupations. Generalizations are, (perhaps too) easily made about 'northern' and 'southern' European traditions and emphases, and between centralized and de-centralized systems.

Another significant issue here is the number of routes by which individuals can acquire qualified teacher status (QTS) and enter the profession and work force. Obvious distinctions need to be made here between undergraduate and postgraduate courses, and in terms of the duration of the experience. In this respect, there is extensive variation. Across ERITE there are courses ranging from 1 year (the shortest in Belgium having a duration of 26 weeks) to 5 years (in Portugal) and 5 years, followed by 2 years in school, (in Germany). England and Wales, because of quite recent changes to regulations, now have 9 different routes to QTS. Such differences confer additional diversity both between countries, and within them, simply because emphases are different and opportunities variable. Indeed it is possible to have courses within the same teacher education institution which are markedly different.

Layer 2 – Institutions

Probing beneath these 'surface' issues of the national context, it would not be expected that any single institution chosen as a national exemplar would be truly representative of the national provision, or indeed of a regional picture, except, perhaps, in terms of a number of broad cultural concerns. Even the latter can break down where regional autonomy is found as in Germany in different *Länder*, in Spain in the 'Autonomous Communities' such as Galicia, and across the UK with its *de jure*, or *de facto*, separate educational systems. In countries with decentralized systems, such as Denmark and the Netherlands, diversity is to be expected.

Institutional autonomy drives, and can virtually guarantee, diversity. Even where there are national frameworks, as in Greece where there is ministry approval for courses, institutions follow their own syllabuses and their own modes of organization and course delivery with the result that courses are distinct and can be markedly different; one consequence of this is that the extent to which environmental education finds a place within students' experience can vary widely. Even with mechanisms for State 'accreditation' and 'approval' of courses, and centrally-determined output 'competences' for courses, universities can still be quite individualistic.

National frameworks are rarely straightjackets, although they vary in their prescription. Because such frameworks have to be interpreted and mediated by individual, and teams of, academics (and teachers) in order to make courses work, such interpretation results in particular shaping, focusing, and shading of courses. Thus, different aspects are illuminated and highlighted according to disposition and inclination. So it is that environmental education will be emphasised in some institutions, and not in others; central in a few and peripheral in many. In Germany environmental education is seen as a 'fundamental prerequisite of the required competence of a teacher' to be delivered through initial teacher education courses whereas, for example, in Denmark there is no mention of environmental education in the state's objectives for initial teacher education.

The culture of the institution is a significant factor here, and the difficulties of 'importing' innovation from one place to another are well known. In an area such as environmental education which rarely has statutory imperative behind it, this is difficult enough within an institution or a single country, and there are issues which are best termed 'inter-cultural' which need to be explored. Translating experiences across countries merely compounds the problem. It is difficult to see how 'top-down' prescriptive, or uncritical transference of practice from one country to another could be effective.

Layer 3 – Courses, management and course teams

Digging deeper into the experience of initial teacher education, within the institution we find the influence of the course, the course team, and senior management. There are three main factors here which tend to increase diversity. One is the nature and length of the course; a 3/4/5-year degree programme is quite different to a 1-year post-graduate course in its scope for exploring or delivering curriculum provision such as environmental education. Paradoxically, whilst there may be greater opportunities to consider environmental education issues in the former, it does not necessarily mean that a more effective provision ensues. Another factor is the *focus* of the course; whether it focuses on the primary or secondary phase is significant, as is brought out in the discussion of the Irish and Greek contexts in other sections of this *Cahier*. A third, and quite significant, aspect is whether there is any scope for a *specific* environmental education input, as for example through core or optional provision, or whether environmental education can only be *permeated* through subject didactics programmes.

'Core' programmes in environmental education can offer opportunities to reach all students – albeit sometimes in a rather shallow way, and there are important issues here concerning what the focus and objectives of such a core should be, and to whom a *minimum* core might appropriately be addressed. In this aspect, there is wide variation here within courses, and the duration of the core varies from 36 to 9 hours. It is clear that the context and the foci vary widely, and it seems reasonable to conclude that the potential outcomes vary as well. Optional programmes can provide the opportunity for those interested to pursue issues in depth. The 200 hour option from the Netherlands (Rotterdam) is one example of this within the project, although it is only taken by 5% of the student cohort. This compares with 50% taking the option in Belgium (Gent) and in Portugal (Lisbon), with the latter course lasting for 44 hours. There is clearly scope for *core + option* provision which meets all needs. In Greece (Thessaloniki) there is an optional course taken by 30% of the cohort which builds on theoretical issues by focusing on students' own practice of environmental education teaching in schools. Optional programmes can be seen as a route to producing specialists and 'experts'. The UK environmental education *specialist* didactics programme (in Bath) has this outcome very much in mind. A further significant factor operating here is that of the role of the course team and/or senior management which can provide a gateway for environmental education, or be a guardian or gate-keeper against it – and against a range of other curriculum foci, for example, 'health education'.

It is the *eccentricity* and hence the *negotiability* of environmental education which are its problem. Environmental education is eccentric in that it is "not centrally placed" to curriculum purposes in schools or to training purposes in initial teacher education. It is "Regulated by no central control, irregular, anomalous, capricious, ... odd and whimsical." These quotes, taken from the Shorter Oxford Dictionary's discussion of 'eccentric', seem apt characterizations of environmental education in schools and in teacher education programmes. Environmental education is clearly 'negotiable' in both schools and in initial teacher education courses, not just because of its lack of centrality, but because of its accompanying lack of (relative) importance – rhetoric aside. In secondary schools, subjects hold sway, with cross-curriculum foci such as environmental education of (relatively) minor importance. Once, such cross-curriculum foci were described as the mortar which held the building blocks of the curriculum in place; now, the fashion is to have dry-stone walling. In initial teacher education there are many facets which are generally deemed to be of greater significance than environmental education. In 'traditional' courses, child psychology, the philosophy of education, and the history of education etc would be rooted more firmly than environmental education. In more 'progressive' courses, it would be a focus upon the reflective practitioner, or perhaps an emphasis on equalizing opportunities which would tend to enjoy greater significance than cross-curriculum foci such as environmental education.

Layer 4 – Tutors

Excavating a little more into the experience of initial teacher education, reveals a new aspect to diversity; that concerning the individual tutor. Individual tutors normally have many 'degrees of freedom' to *moderate* and *interpret* a curriculum package, to include or exclude issues such as environmental education, and because of the desire for professional autonomy, are quite likely to want to do that anyway, whether they have the freedom or not. This will result in aspects such as environmental education being emphasised with a motivated tutor, and marginalized with a disinterested one. A major focus for staff development needs to be the raising of awareness and interest – the winning of hearts and minds – and then a careful raising of skill levels to allow tutors to operate in this difficult area.

Layer 5 – Schools

A further level of diversity relates to the role of the school. Where schools play a central part in initial teacher education provision, either through school placements integrated within programmes as, for example, in the Netherlands and France, or following on from courses, as in Portugal, the extent to which students are able to practice environmental education *in schools with* children still varies considerably, and depends crucially on the extent to which schools themselves can provide context, opportunity and support

The diversity here is wide. Since the 1970s, in Germany environmental education has been a compulsory element of all phases of schooling, although there is wide interpretation across different Länder, and in Ireland similarly 'the environment (has been) seen as a basis for learning and learning activities'. In France there is no specific statutory focus, in the Netherlands there is no national curriculum, whilst in Denmark, a degree of unofficial guidance is given. In Spain, the Autonomous Communities can modify the national arrangements, and this results in environmental education being viewed as either optional, or a cross-curriculum element; in Portugal environmental education has been an informal part of schooling for over twenty years.

All schools offer *some* scope for a limited range of student activities, eg audits, curriculum analysis, and planning; but not all can provide the teaching and/or extra-curricular experience which developing professionals need. This diversity of school circumstance further increases the diversity of student *experience*, and adds to the variability of the effectiveness of that experience. Where there is no opportunity for a school placement prior to a first post, gaining such experience is clearly difficult. It is important, also, to note that there is a difference between the inclusion of environmental *issues* within curricular, and the *realization* of environmental *education*.

Layer 6 – Individual students

At the final level, at the core of the issue, lie the students. The awareness, motivation and disposition of the individual student will determine the extent to which any opportunities which are provided can be taken up. Again, there is an issue here about winning hearts and minds which has a direct bearing on the focus and *nature* of the pedagogy employed, and which links to questions about the centrality of values education within environmental education. It might be argued that only when such motivation has been established can effective teaching/learning take place. However, this loses sight of the fact that exposure to the issues through a challenging pedagogy can itself be a means of raising awareness and inducing motivation and 'ownership'.

Discussion and implications

The significant question is 'what are the implications of all of this for the work of the EBITE project?' The diversity of prevailing circumstances and existing provision across the member states of the EU has to be faced, as has the precarious position of environmental education in many institutions.

However, for two reasons, diversity of circumstance and context might not necessarily mean diversity of effective practice. It could be that there are ways of sharing and co-operating between individuals and institutions because, firstly, effective practice cannot vary greatly as there is a limited range of activity which can be described as 'effective'; and, secondly, because diversity and breadth of interpretation in different contexts will necessarily lead to overlap across institutions.

In principle, it might be argued that such diversity is potentially a good, and even necessary, circumstance. In analogy with '*biodiversity*', the kind of diversity we are faced with in education and teacher education – which might be termed '*edudiversity*' – could be viewed as a 'rich pool of evaluated experience freely available to be drawn on critically by institutions and tutors in developing their own courses and practices'. If the risks of going down the equivalents of evolutionary cul-de-sacs are to be minimized, the key words here are 'evaluated', 'freely' and 'critically'. This implies a bottom-up approach with an open interchange between institutions, which is the way in which the EBITE project is operating.

Section Three

Environmental Education into Initial Teacher Education

Status Reports

Introduction

The following pages provide some background to environmental education within pre-service programmes in all eleven of the member states working within the project. Anyone requiring more detail should refer to the literature cited in this section, or contact the CPR. Details of institutions and fax numbers can be found in Appendix 1.

Status reports are provided here in the following order:

Country	Author	Institution/Role	Page
• Belgium	Léon Mathot	Inspecteur dans l'Enseignement Secondaire	11
• Denmark	Torsten Enemærke	Odense Seminarium	13
• France	Claudio Rubiliani	IUFM de Poitou-Charantes	15
• Germany	Klaus-E Jaritz	Ped. Hochschule, Erfurt	19
• Greece	Vasiliki Papadimitriou	Aristotelian University of Thessaloniki	24
• Ireland	Peadar Cremin	Mary Immaculate College, Limerick	28
• Italy	Silvia Caravita	Istituto di Psicologia, CNR, Rome	33
• Netherlands	Wieneke Lutgerhorst	Hogeschool Rotterdam & Omstreken	38
• Portugal	Mariana P Pereira	Dep. Educação - Fac. Ciências - Univ. Lisboa	44
• Spain	María Pilar Jiménez-Aleixandre	Universidade de Santiago de Compostela	49
• UK	Chris Oulton	University of Bath	54

Please note that data are currently not available for Luxembourg

Environmental Education into Initial Teacher Education

Belgium Status Report

Léon Mathot
Inspecteur dans l'Enseignement Secondaire

Il y a, en Belgique, trois catégories d'enseignants correspondant à trois niveaux d'enseignement:

1 Les instituteurs prennent en charge les élèves de l'enseignement fondamental (enseignement préscolaire de 2 1/2 ans à 6 ans et enseignement primaire de 6 à 12 ans). Les instituteurs sont formés dans des *Ecoles normales primaires (Bac + 3)*. L'enseignement comporte des modules de cours théoriques, principalement en pédagogie, et des stages pratiques.

L'Education à l'Environnement (EE) ne figure pas en tant que telle dans la formation. Ce sont les cours d'étude du milieu (sciences, histoire, géographie) qui sont censés préparer à cet enseignement. Le niveau 'scientifique' des instituteurs est relativement faible; c'est ce qui explique, peut-être, que, dans leurs classes, les instituteurs font très peu d'activités relatives à l'EE.

2 Les agrégés de l'enseignement secondaire inférieur (en abrégé AESI, aussi appelés 'régents') qui enseignent dans les classes de *l'enseignement secondaire inférieur (12 à 15 ans)*. Ils ont une formation initiale de 3 ans (Bac+ 3) portant sur deux spécialisations, voire trois (langue maternelle-histoire, mathématique-physique, biologie-chimie-géographie,

La formation scientifique et pédagogique des AESI est, en général, d'un bon niveau ce qui les prépare mieux à la prise en compte de l'EE dans leur enseignement. Dans la pratique, hélas, on constate qu'il y a également peu d'activités centrées sur l'EE au niveau de l'enseignement secondaire inférieur et ceci est dû probablement, au cloisonnement disciplinaire de l'enseignement belge.

3 Les *agrégés de l'enseignement secondaire supérieur* (en abrégé AESS ou 'licenciés') sont les seuls enseignants à avoir une *formation universitaire complète (Bac + 4)*. Les licenciés ont une formation scientifique d'un haut niveau; ceux qui choisissent de faire carrière dans l'enseignement reçoivent une formation pédagogique de base; ils enseignent au niveau de la tranche d'âge 15-18 ans ou, au-delà, dans l'enseignement supérieur non universitaire (graduates, ...).

La formation pédagogique des licenciés est jugée trop faible et des projets de réforme sont actuellement à l'étude. Les AESS sont, en principe, bien préparés, sur le plan des connaissances, pour aborder des activités en matière d'EE. Hélas, compte tenu des programmes très chargés dans l'enseignement secondaire supérieur, il y a très peu d'initiatives qui sont prises en matière d'EE à ce niveau. Ainsi donc, dans l'ensemble, les activités en matière d'EE qui sont organisées dans l'enseignement primaire et secondaire sont principalement le résultat d'initiatives individuelles prises par des enseignants motivés, engagés dans des actions de sensibilisation dans le cadre des associations de défense de l'environnement (ONG) ou ayant reçu une formation complémentaire à l'Université (cf certificat complémentaire ou licence en environnement).

A noter que depuis quelques mois (Janvier 1993), le Ministère de l'Education a fait parvenir, dans tous les établissements de la Communauté française (réseau de l'enseignement officiel), un programme-cadre en matière d'Education à l'Environnement. Ce document¹, important, précise les objectifs, les méthodes et les moyens à mettre en oeuvre pour mener à bien des activités d'EE dans l'enseignement secondaire. Selon ce document officiel, les activités en EE devraient être organisées à l'intérieur de la grille-horaire de chacune des disciplines. Dans cette perspective, une relecture des programmes est proposée aux enseignants.

¹ Ce document peut être obtenu à l'adresse suivante: Ministère de l'Education de la Communauté française, Centre technique, Route de Bavay, 2B, B-7080 FRAMERIES, Belgique. Tél.: 065-66 73 22; FAX: 065/ 66 14 21.

Collaboration Eeite – Project et Groupe des Experts en EE de la DG XI

Depuis de nombreuses années, la CE/DG XI réunit régulièrement un groupe d'experts en matière d'EE. Ce groupe est constitué de représentants des 12 pays membres; ce sont des responsables de haut niveau, administratifs ou pédagogues. Ils servent essentiellement de personnes-ressources et de relais entre la Commission et les gouvernements respectifs en vue de faciliter la circulation de l'information. Ce sont également les experts qui fournissent la documentation nécessaire à la CE/DG XI pour rédiger les rapports préparatoires aux réunions du Conseil des Ministres.

Depuis plus d'un an, un sous-groupe de travail (Composé actuellement de MM. GIOLITTO (F), PARDO (E) et MATHOT (B.f.) s'est constitué en vue de rédiger un guide méthodologique en matière d'EE. Ce document de référence devrait servir à décrire le plus clairement possible ce qu'on entend par 'éducation à l'environnement' dans les 12 pays de la Communauté. Il s'agit surtout de dresser un tableau comparatif des différentes initiatives prises dans ce domaine. Le guide ne sera en aucun cas un texte normatif et encore moins un document d'évaluation.

Il est souhaitable que les travaux entrepris dans le cadre de EBIT – Project et ceux du sous-groupe de la CE/DG XI débouchent sur des perspectives convergentes sinon communes. Tout double emploi serait regrettable. Une collaboration étroite entre les deux groupes de travail nous paraît souhaitable. Les modalités pratiques de cette collaboration restent à définir.

Note

L'accès aux fonctions enseignantes de l'enseignement secondaire requiert la possession d'un grade supplémentaire, celui d'agrégé de l'enseignement secondaire supérieur qui peut être délivré sans délai d'études après celui de licencié.

Ref:

Ministère de l'Education Nationale (1988) 'Le mouvement éducatif en Belgique' (p.41), Bruxelles

Environmental Education in Initial Teacher Education

Denmark Status Report

Torsten Enemærke
Odense Seminarium

Environmental Education in Teacher Education (primary and lower secondary - 6-17 years)

Danish law on teacher education only indicates the objectives of the subjects and the relative part each subject has in teacher education programmes. It is up to the institutions themselves to determine the content and the form which examinations will take.

Environmental education is not a specific subject in teacher education programmes. The word environment (miljø) is only found in one of the articles setting out the educational objectives of the subjects, and there the word is used to indicate the natural world (our surroundings) and does not necessarily imply environmental education.

In geography, biology, physics/chemistry, natural science (naturfag) and social sciences we have the possibility of dealing with issues relating to environmental education. But the lack of a precise definition means that there will necessarily be many differences in the ways in which teachers deal with the subject, particularly if it is not specified in local curriculum plans.

Looking at the teaching tradition, and what teachers tend to do, it is possible to make the following points about the status of environmental education within the subject curriculum:

- 1 In biology there has been a development towards a growing focus on the ecological side, which is closely connected to an environmental approach to nature;
- 2 In geography, human- and cultural-geography play a important role. Each of these aspects stress the interaction between nature, humankind and society which is an important part of environmental education.
- 3 In physics/chemistry there are significant opportunities to emphasise environmental education, particularly in terms of the different chemical cycles, eg CO₂ and water (pollution and acid rain). This aspect might be particularly stressed as this subject has a prominent place in the Folkeskole curriculum.
- 4 In natural science, which is quite new, (first course offered in 1992/93) there are great possibilities for environmental education:

"The aim is that the students acquire knowledge and skills essential for a general understanding of nature. Through exemplary models based on biology, geography, physics and chemistry the students are to gain insights into:

- different conceptions of nature and the world;
- connections between energy, processes, structures and paths, biotic as well as a-biotic;
- connections between resources, technology, production and the environment, including the clashes of interest that exist between sustainable growth of the environment and the growth of society;

and to gain skills in:

- examining natural phenomena in the laboratory and in the field, applying the methods and aids found in the subjects mentioned above."

Environmental Education in the 'Folkeskole'

The situation found in teacher education programmes is also the case in the curriculum of the 'Folkeskole'. Here, whilst environmental education is not a specific subject as such, it can form part of subjects such as: biology, geography, physics, nature and technology, and also occur in cross-curricular activities. In some of these subjects, specific mention of environmental issues may be

found. In physics, for example, one of five parts of the unofficial guidelines for the curriculum focuses on 'life and environment'. The positive attitudes of a substantial proportion of teachers makes it very likely that topics related to environmental teaching are part of subject study.

Roles of Government and Non-governmental Organisations

The government determines the framework for school education in form of subjects, and their aims, and in the role the different subjects shall play in that education. Besides this, the government sometimes makes reports which give advice; it also supports development. Local authorities (and the schools) determine the curricula within the framework given. Teachers themselves have the freedom to determine content and teaching methodology.

This means that the teaching materials which are available have great importance for what is done. The teaching materials are created and sold by private publishers, and no ministerial approval is required.

A group of non-governmental organisations has an interest in promoting environmental education and do so through courses, teaching materials and so on. An example is a project call 'Green banner - green school'. Made by an organisation covering associations of teachers, councils for nature and freetime, and a local school authority.

Barriers in Teacher Education for Environmental Education to Overcome

In a way, there are very few barriers to the development of environmental education. Teachers or tutors can pursue it if they wish. However, because there is little official support for it, the barriers lie in the attitudes of teachers themselves and of their institutions, in the lack of good teaching materials, and in the limited tradition for cross-curricular approaches.

Personal Involvement in Environmental Education

The author represents Odense Seminarium (college of education) in the RIF network No. 12 'European dimension in education and environment'. He represents a group of colleagues from biology, geography, physics/chemistry, natural science and social science, and is responsible for organisation and administration, playing a role in furthering development.

At the college there are pre-service and in-service teacher education programmes, and an 'open university' education. There is little funding for development work.

Relevant Publications

Material in English includes:

'Water and Environment in Europe'
RIF sub-network No. 12
Geografforlaget DK 1993
ISBN 87 7702 127 4

Environmental Education in Initial Teacher Education

France Status Report

Claudio Rubiliani
IUFM de Poitou-Charantes

La Place de l'Education a l'Environnement dans les Programme Scolaires

Alors que l'environnement est une préoccupation forte des étudiants et des enseignants, paradoxalement, l'éducation à l'environnement (EE) n'est jamais spécifiquement mentionnée dans les programmes du premier et du second degré.

A l'école primaire, toutefois, on peut introduire l'éducation à l'environnement grâce aux programmes disciplinaires de Sciences et Technologie (1985), par exemple: 'diversité des milieux et interdépendance de leurs vivants' (cours élémentaire); 'les différentes sources d'énergie, consommation et économie d'énergie en France' (cours moyen).

Dans le programme de Géographie, on trouve: 'premières analyses de paysages par étude de *l'environnement proche*' (cours préparatoire); 'étude de *l'environnement immédiat*'; 'comparaison avec d'autres cadres de vie (milieu naturel, activité humaine, composantes économiques et sociales) choisis dans chacune des zones polaire, intertropicale et tempérée' (cours élémentaire); 'l'aménagement du territoire et les problèmes de l'environnement' (cours moyen).

Les 'compétences' à acquérir à la fin de chaque cycle publiées en 1991 représentent un complément fort intéressant aux programmes de l'école primaire dans la mesure où ils introduisent une approche interdisciplinaire ainsi, dans la rubrique 'compétences transversales' on trouve: 'Attitude – construction de la personnalité, acquisition de l'autonomie et apprentissage de la vie sociale' – Cycle 3: l'enfant ... peut identifier quelques grands problèmes du monde (la guerre, la faim, la santé, *la protection de l'environnement...*) et manifester une sensibilité à leur égard.

Dans l'enseignement secondaire (de la 6ème d'études obligatoires au baccalauréat, soit 4 ans de collège plus 3 ans de lycée) l'éducation à l'environnement est aussi 'dépecée' entre les programmes des diverses disciplines, cet éparpillement étant renforcé par la spécialisation disciplinaire des enseignants du second degré.

Ainsi, on peut aborder l'éducation à l'environnement par le biais de l'écologie (classe de 5ème), de la géologie (en 4ème programme des Sciences et Techniques biologiques et géologiques), à travers la découverte, puis l'application de la démarche technologique économique (programme de Technologie) ou par l'étude de l'adaptation au milieu (6ème), du développement de la Nation (3ème) programme d'Histoire-Géographie, ou aussi par le biais du programme d'éducation civique.

Les programmes des lycées ne font qu'approfondir cette approche strictement disciplinaire de l'environnement.

Toutefois, nous nous devons de noter une approche interdisciplinaire 'obligatoire' dans le cadre des six thèmes transversaux (consommation - développement - *environnement et patrimoine* - information - santé - sécurité) instaurés en 1986 dans le second degré. Mais, en l'absence d'horaire clairement défini, l'étude de ces thèmes transversaux se traduit de manière très variable dans les établissements et est fonction de l'investissement personnel d'une équipe d'enseignants.

Les Obstacles a l'Education a l'Environnement et son Statut dans la Formation Initiale des Enseignants

La nature même du concours de recrutement des diverses catégories d'enseignants représente sans doute l'obstacle majeur pour une éducation à l'environnement. En effet, les différents programmes des concours sont axés sur des connaissances disciplinaires, principalement, même pour le premier degré.

Ensuite, le cadre disciplinaire strict de l'enseignement renforce la conception partielle, partielle, théorique, que se font les enseignants (et par là les élèves) de l'éducation à l'environnement.

En conséquence, il apparaît que l'éducation à l'environnement puisse, être introduite avec un impact optimal seulement à partir de la seconde année de formation initiale, après les concours, lorsque les entrées interdisciplinaires et didactiques peuvent s'appuyer sur une expérience professionnelle minimale.

Chaque IUFM (structure régionale) a son propre programme de formations, toutefois on peut résumer les formations à l'éducation à l'environnement à trois tendances, directrices, complémentaires:

1 *Une approche sectorielle*, axée sur la discipline et donnant lieu à des journées de regroupement des enseignants d'une même discipline qui vont échanger leurs pratiques et ainsi synthétiser les savoirs factuels, conceptuels et méthodologiques indispensables à l'étude d'un problème environnemental (exemple: le cycle de l'eau ...).

2 *Une approche thématique interdisciplinaire*. Dans des ateliers optionnels généralement, les étudiants vont se centrer sur un problème spécifique (exemple: réduction des nuisances, gestion des ressources naturelles...) et inventorier les bases conceptuelles et méthodologiques nécessaires pour le traiter (voir le résoudre).

3 *Une approche comportementaliste et transdisciplinaire* s'appuyant sur un travail d'équipe. Les étudiants devront conduire une démarche de projet (une simulation, un mini-projet) et pour ce faire entrer en relation avec des partenaires institutionnels ou associatifs oeuvrant dans le domaine de l'environnement.

La première approche vise à introduire une sensibilisation à l'environnement dans l'enseignement de toutes les disciplines. La seconde et la troisième approche donnent des outils pour introduire l'éducation à l'environnement dans le cadre des projets d'établissements établis chaque année. Au-delà, elles présentent l'éducation à l'environnement comme une forme 'd'Education à la Citoyenneté'.

Implication dans l'Education a l'Environnement

Personnellement, j'ai été fortement sensibilisé à la dimension 'environnement' lorsque, travaillant sur le système nerveux des crabes de Bretagne, survint la catastrophique marée noire de l'Amoco Cadix.

Ensuite, je dépassais le strict domaine écologique pour aborder dans mes recherches l'approche systémique à travers l'étude des relations hôte-parasite et le problème de la co-évolution des espèces (où, outre les facteurs biologique, physique, chimique, le facteur économique se révéla, être non négligeable).

Désormais, au sein de l'IUFM POITOU-CHARENTES, je coordonne les modules 'Education à l'Environnement' dans la formation des enseignants du premier et du second degré. Avec l'équipe de l'IUFM et nos 'partenaires' (associatifs et institutionnels) nous utilisons la troisième approche décrite ci-dessus, c'est-à-dire une approche systémique incluant l'exécution d'un projet par les stagiaires.

Nous avons transposé cette stratégie dans le cadre de la formation de formateurs. Dans ce but, nous avons mis en place un Stage National de Formation intitulé 'Devenir formateur de maîtres en éducation à l'environnement' qui a pour cadre le Marais Poitevin.

The Place of Environmental Education in the School Curriculum

Paradoxically, although the majority of students and teachers are strongly concerned about environmental issues, there is no specific 'environmental education' focus within either the primary or secondary school curriculum.

However, at primary level environmental education may be introduced:

- through science and technology; eg in:
'diversity and interactions' (second and third years); and in:
'energy – production, consumption and saving' (fourth and fifth years).
- through geography; eg in:
'first analysis of landscapes by the study of proximate environments, natural medium and traces of human activities' (1st year primary); and in:
'the study of the local environment: comparison with selected other life surroundings (polar, inter-tropical and temperate zones): natural medium, human activity, economic and social components' (2nd and 3rd year primary).

An interesting complement to the primary curriculum was published in 1991 and focuses upon 'the competences that must be acquired at the end of the elementary course'. It introduces for the first time an interdisciplinary approach. An example is: "Behaviour: ... the child may identify some great problems of the world (war, health, hunger, environmental preservation, ...), (and) must be aware of these problems".

At secondary level (from 6th form to the bachelor's degree, i.e. for students from age eleven to eighteen) during the four years of 'college' or secondary school, environmental education can be found scattered among the programmes of the various subjects of the curriculum. Environmental education can also be delivered through ecology for class 5 (second year of secondary education) or geology (third year SS) [programme of biological and geological sciences - 1986], by way of the study of 'adaptation to the environment' [class 6 = 1st year secondary education], 'the national development' [class 3 = 4th year secondary education [programme of history and geography] and also by the way of the programme of civics education.

The curriculum of the 'Lycee' addresses the issue of 'environment' mainly through subject discipline courses (ecology - biology/development - economy/landscape - geography). However, a tentative interdisciplinary approach was launched seven years ago by the way of six 'cross-curriculum themes' (consumption - development - environment and patrimony - information - health - security) which must be studied at this level. But, without a definite curriculum programme, such themes can only be based on the personal involvement of teachers in each establishment.

The Status of Environmental Education in Initial Teacher Education and Barriers to be Overcome

The existence of competitive examinations in the recruitment of all the teachers may represent the main barrier to environmental education. The various entrance tests have a subject focus – even those for elementary school teachers. In this way, the disciplinary approach strengthens the partial, theoretical view of environmental education, especially at secondary level, and subject-based teaching becomes a prison. As a result of this, any focus on environmental education takes place ideally in the second year of pre-service programmes, when interdisciplinary and didactical criteria may be supported with personal experience.

Each department branch of the IUFM has its own programme, but there are three complementary foci:
1 - A 'sectorial approach' with meetings of teachers of the same subject discipline. They exchange their experience and try to make a methodological and conceptual overview of a particular environmental problem (eg the water cycle).

2 - A 'thematic and interdisciplinary approach' which often occurs through optional 'working groups' where students tackle a specific problem (eg waste prevention, depletion of natural resources) and consider the conceptual and methodological bases needed to deal with such issues.

3 - A 'behavioural and multi-disciplinary approach' where students work on a team basis and carry out a small project (eg a simulation). Each team makes contact with governmental and non-governmental organizations whose work focuses on an aspect of the environment.

The first approach aims to introduce an awareness of the environment into the teaching of each subject. The second and third approaches deal with the introduction of environmental education into the 'school project' which each establishment must set up every year and, beyond this, present environmental education as an aspect of the 'education of the citizen'.

Personal Involvement in Environmental Education

The author's personal involvement in environmental education began whilst he was working on the nervous system of crabs in Brittany, and could witness the effects of oil-spill of the Amoco Cadiz at first hand. Following this, he was able to move beyond a limited ecological focus to adopt a systemic approach dealing with host-parasite relationships and the problem of species co-evolution and adaptation (introducing economy in addition to biology, physics, chemistry).

Now, at the IUFM of Poitou-Charentes, he coordinates the modules 'environmental education' in teacher education for primary and secondary education. With the IUFM team and in close cooperation with governmental and non-governmental organizations, the third approach, as described above, is used, that is, a project-based systemic approach. This strategy has now been transposed to in-service teacher education, where a national 'stage de formation' on the theme of environmental education is organized each year.

Environmental Education in Initial Teacher Education

Germany Status Report

Klaus-E Jaritz
Ped. Hochschule Erfurt

Introduction

Before describing the status of environmental education in initial teacher education in Germany, it seems to be necessary to give a general overview of the place of environmental education in school curricula and of its implementation in classes.

The Place of Environmental Education in the School Curriculum

Since the late 1960s, syllabuses in biology and geography have contained environmental issues. More intensive discussions about environmental education in the 1970s produced concepts and relevant teaching materials. As a follow-up to the international activities of UNESCO in Stockholm, Tbilisi and Munich, recommendations and resolutions on environmental education were adopted in the Federal Republic of Germany. In 1980, the 'Joint Conference of the Ministers of Culture' (KMK) decided that environmental education should become a compulsory component of school curricula.

The following table shows the development of environmental education in and outside the school:

from the mid-1960s:	• start of critical discussions of environmental pollution; • publications in educational journals;
from c. 1970:	• production of teaching materials for subject teaching (books and journals);
from c. 1975:	• methodological developments (published in books and journals);
from c. 1980:	• emphasis on work done outside school; • setting up of school gardens and bio-types for activities, eg ponds and parks on school grounds;
from c. 1982:	• gradual shift of emphasis towards setting up and using environmental centres in order to help teachers to bridge any gaps in their training;
from c. 1985:	• reinforcing initial and further teacher education in the area of environmental education; • greater emphasis on environmental issues in vocational training;
from 1987:	• testing and publishing new methods of environmental education in pilot schemes conducted in the various 'Länder';
today:	• efforts to intensify empirical research in environmental education; [1]

Today, environmental education is part of all natural science subjects in school and the next task to be addressed is a more effective incorporation of environmental phenomena into the other school subjects. Several federal 'Länder' have now worked out so-called 'Rahmenrichtlinien' for environmental education in schools. These 'Richtlinien' are guidelines for curricula work, for classroom teaching and for educational administrations. Beside the aims and tasks of environmental education, these guidelines contain didactical suggestions for the different age groups of students.

School curricula and guidelines are based on the assumption that the approach to the multi-faceted and complex structure of the human environment requires different perspectives and in-depth subject knowledge. However, environmental education is not an educational approach which is confined purely to the transmission of knowledge; it also is concerned with affective and axiological matters. These are essential when one is seeking to generate permanent patterns of behaviour calculated to

preserve and improve the quality of the human environment. Therefore, it is not possible to enable students to behave in a more 'environmentally friendly' way in one individual subject only. Furthermore, it is obvious that the simple accretion of individual topics will not be sufficient to achieve all the aims of environmental education, including its secondary ones.

For this reason, the guidelines and curricula do not only contain subject-oriented essentials, but also increasingly contain proposals on how the various disciplines could co-operate. The curricula also permit the incorporation of local and regional environmental issues into teaching. In spite of the fact that curricula and respective teaching materials are not enough in themselves to engender the desired pedagogical practice, they nevertheless represent an essential basis for guiding the work of teachers and students in such a complex field.

How Environmental Education is Reflected in the Different Stages of School in Germany

Primary Stage ('Grundschule, Klasse 1-4')

As basic attitudes of human beings are formed within the first years of life, environmental education is essential in primary education. The full awareness of, and direct contact with, nature opens up a wide range of possibilities of teaching primary school students sensitive and responsible behaviour in their immediate environment. Therefore, environmental education is to be found above all in the 'Sachunterricht' which, owing to its integrating structure (dealing with natural, technical and social aspects), is especially suitable for bringing young students into contact with these issues. Other subjects such as German, art or religion also make additional contributions within this context.

Secondary Stage ('Sekundarstufe I, Klassen 5-10')

In secondary schools at level I, environmental education takes place in a more subject-oriented way than in primary schools. The various 'Länder' have developed different forms to incorporate environmental education in curricula and teaching. In some, you will find, "Koordinierungs-Leit-oder Integrationsfächer". Here, environmental components are introduced in preference in what are known as 'pivotal' disciplines, such as biology and geography. As these cover a very wide field, they lend themselves more readily to an understanding of the complexity of environmental problems and to the development of inter-disciplinary approaches.

In general it is now obvious, however, that environmental issues can most frequently be raised in biology, chemistry, physics and geography curricula. In such subjects as German, arts, social studies, politics, religion/ethics, physical education and crafts/ technology, relevant topics and issues are incorporated as well. The curricula leave some room for project activities so that the complex nature of environmental issues can be taken into consideration. However, the incorporation of environmental aspects into curricula does not automatically mean the implementation of environmental education in schools.

Secondary Stage ('Sekundarstufe II, Klassen 11-13')

In the so-called 'Sekundarstufe II', environmental education themes are integrated into curricula in a similar way as found in grades 5 to 10. Here, a greater emphasis is placed on the complex and systematic structure of the environment. Independently of the various subjects in question, ecological systems and modeling, reflections on the relationship between human beings and the environment, and social, economical and ethical aspects all play a greater role in these grades.

The Status of Environmental Education in Initial Teacher Education

Initial teacher education in Germany is divided into two parts. The training takes place in academic establishments (first course) and in so-called "Studienseminar" (second course), which normally follows on from academic study at university. This system is followed by students preparing to teach in both the primary and the secondary phase.

In the 'first course', which lasts for five years, students acquire a thorough scientific knowledge of their subjects and of the various fields of educational and social sciences. The 'second course' of teacher education, the 'Studien-seminar', takes place in schools and lasts two years. This course concentrates more on the practical aspects of teaching. It is here that students prepare, carry out and evaluate their own lessons under the guidance of experienced teachers.

The incorporation of an environmental dimension into initial teacher education is a fundamental prerequisite for the required competency of a teacher so that they will be able to: impart the necessary knowledge, and make children aware of environmental problems and our joint responsibility for the near environment surrounding us. In Germany environmental education cannot be found as a separate subject on the timetable of a school, but it is integrated into existing subjects. The same applies to teacher education. Initial teacher education increasingly includes environmental education for future primary, secondary and vocational school teachers. Environmental protection and environmental education are more or less integrated into all the relevant courses of study.

In the 'Recommendations and Working Documents on Environmental Education' (Munich 1978), published immediately after the Inter-governmental Conference on Environmental Education (Tbilisi, 1977), specific tasks were formulated for teacher education:

"Teacher education in subjects in which environmental education has a special role should include an interdisciplinary basic environmental education, such as theory and practice of ecology, scientific methods for analysing load capacity, economics, literature, environmental issues, history of the man-made environment, environmental law, environment policies, change of landscape, the world of work." [2]

However, such recommendations from various sources can obviously only be implemented in a long-term process. An empirical study shows that only 9.4% of teacher education students deal with environmental issues within their academic studies, whereas 64.3% do so outside their formal training. Only 23.7% of the students sampled consider that they are offered sufficient environmental education training during their studies. [3] A closer look at teacher education reveals a concentration of environmental topics in the natural sciences. As in the schools, biology is by far the leading discipline where environmental questions are incorporated. Environment-related issues occur less frequently in geography, chemistry and physics. To a certain extent, global environmental problems are dealt with in sociological disciplines.

Up to now, environmental education has had only a small impact on studies in non-science disciplines. Since environmental issues are very complex in nature, it is necessary to consider the various dimensions of the environment, ie its ecological, social, and cultural dimensions. This is true in teacher education too.

Therefore, discussions in teacher education increasingly include question as to how environmental education can become a part of non-science disciplines. Apart from the relevant qualification of the teaching personnel, extensive research work is required. New forms and methods need to be developed and tested in order to combine, for instance, environmental aspects of natural sciences with those of the social sciences. Such research work should focus on primary concepts, target groups, didactic tools and practices, etc. Research is needed to identify points of convergence and complementarity with other educational activities whose subject-matter relates to fundamental aspects of the human environment.

In previous years, lecturers tried to include environmental themes in special studies. This has mainly been done in the following ways:

Firstly, lecturers attempted to incorporate specific environmental topics into the subject-matter of the discipline in question. Secondly, lecturers attempted to link environment-related themes of disciplines with relevant aspects of adjoining disciplines. This, however, created a lot of problems and many lecturers ceased their activities. So-called 'Ringvorlesungen' were another attempt to deal with environmental aspects in a more interdisciplinary way. During a semester, lecturers from different disciplines presented their subject-related topics in a circular way. In this way students are made familiar with different scientific views on a certain aspect of the environment, and become acquainted with the complexity of environmental issues. However, most of the teacher education establishments have as yet made little progress in moving away from a certain one-sided orientation of environmental education in natural science, towards the necessary interdisciplinary environmental teaching.

Among teacher education establishments, a number of different formats have been devised in the last few years to provide environment-linked teacher education. Success achieved has varied, however.

Projects to Promote Environmental Education in Teacher Education

Examples include the following:

[i] Model Experiments

'Modellversuch: Umweltbildung, Umwelterziehung und Umweltberatung'

The integration of ecological didactics and advisory practice into scientific pre- and in-service training. (Hamburg University)

[ii] Study courses

'Erweiterungsstudiengang: Umwelterziehung'

Interdisciplinary studies in the field of environmental education after the first government examination of student teachers. (Pädagogische Hochschule Ludwigsburg)

'Spezialkurs: Umwelterziehung'

Incorporation of environmental education into educational science as voluntary and compulsory studies. (Potsdam University)

'Interdisziplinäre Ergänzungsrichtung Umweltbildung'

As part of an additional study course, environment-related issues are researched under natural, technical, social and educational science aspects. (Pädagogische Hochschule Erfurt)

'Fachkonferenzen'

In the last ten years, several national 'Fachkonferenzen' have been held to discuss the implementation of environmental education in teacher education. Experts from teacher education establishments presented various projects and emphasized the necessity to incorporate environmental education topics into basic study courses for all students, and to take these topics into consideration in the regulations governing academic studies and examinations for teacher education.

'Ad-hoc Gruppe Universitäre Umwelterziehung'

In 1992, lecturers from different teacher education establishments formed an ad-hoc group on academic environmental education. This group has attempted to define the current status of environmental education in selected teacher education establishments in order to show what possibilities exist for training student teachers in the field of environmental education. These investigations will result in several case studies and should lead to a productive discussion on environmental education in teacher education.

Barriers in Teacher Education for Environmental Education to Overcome

Although environmental education is now acknowledged as an excellent means of enhancing the relevance and usefulness of general education, persistent difficulties of a conceptual and structural nature within the education system still prevent it from being implemented in truly interdisciplinary ways. A range of these will now be briefly touched upon.

As far as teacher education is concerned, mainly subject-focused approaches are practised, while interdisciplinary ones are, thus far, relatively rare. One reason for this could be the high degree of specialisation found within such disciplines. Sometimes, there are problems of co-operation between specialists of different disciplines – a certain psychological and corporative resistance, and in many cases, these problems have social reasons. There are also difficulties of communication amongst practitioners, and some lecturers fear that interdisciplinary approaches might be 'unscientific'.

In environmental education, many conceptual and methodical questions have not yet been sufficiently answered. There needs to be research into potential learner groups' knowledge about, and attitudes towards, the environment. This is particularly important with regard to the training of teachers who still progress into the profession from a process of traditional single-discipline education.

Empirical studies demonstrate that there is a discrepancy between the knowledge acquired about the environment and appropriate environmental behaviour. Environmental education in teacher education should, therefore, focus on the various aspects which effect a student's behaviour. In this regard, problems such as perceptivity (eg. perceptivity of environment and environmental problems), the change of values, or the handling of conflicts are essential themes to be dealt with in teacher education.

Another frequently-encountered problem is the restriction of environmental education to the natural sciences. More efforts must be undertaken by social and educational sciences to incorporate environmental education into these important fields of teacher education. Furthermore, the ethical dimension of environmental education must be considered to a greater extent.

Relevant Publications

1

Eulefeld, G (1991) Environmental Education in the Federal Republic of Germany: a survey.
European Journal of Education 26 (4), p. 302

2

Eulefeld, Kapune (1979) Empfehlungen und Arbeitsdokumente zur Umwelterziehung – München,
Kiel: IPN S 278

3

Hönigsberger (1991) Erste Ergebnisse einer bundesweiten Erhebung der Umwelterziehung in der
Lehreraus- und -fortbildung. Tagungsunterlagen; Heidelberg

Environmental Education into Initial Teacher Education

Greece Status Report

Vasiliki Papadimitriou
Aristotelian University of Thessaloniki

The Status of Environmental Education in Initial Teacher Education

As the status of environmental education in initial teacher education (ITE) is firmly connected with the whole context of ITE, it is useful, initially, to offer a brief outline of this context.

Nursery and Primary Teacher Education

The education of nursery and primary teachers was taken over by tertiary education about ten years ago after two year-courses in Teacher Education Colleges which led to a Primary School Teacher's Diploma were abolished by law. Currently, students after four years of study in the corresponding university departments receive an undergraduate degree which enables them to teach only in either nursery or primary schools. Later on, just before they are appointed and start teaching, they attend a three-month supplementary course in 'Peripheral Educational Centres' (PEC) which operate under the guidance of the Ministry of Education.

This final training stage is important as many teachers actually enter the profession long after they have finished their undergraduate university studies because the number of students who get a relevant university degree far exceeds the number of teachers that are actually needed – and ultimately taken into the profession.

Secondary Teacher Education

ITE for secondary school teachers is virtually non-existent. Secondary teachers are single-subject graduates which means that anyone holding a university degree in the relevant subject (eg maths, chemistry, Greek, history etc.) can become a teacher. In some cases, university departments, particularly those of literature and science, take for granted that most of their graduates will eventually become teachers, and offer a number of optional courses directly related to education. University graduates just before they enter the teaching profession also have a three-month course in education, in the corresponding PEC. Later on, they can take short term in-service courses organized by consultants who offer them guidance concerning the teaching of their subject.

As a consequence of these differences in ITE between primary and secondary school teachers, the initial training in environmental education is organized differently. Among secondary school teachers who enter the teaching profession only a few are likely to have any idea of what environmental education exactly is. In reality, only, those who took environmental education as an optional course during their studies can be familiar with this topic. Concerning their subsequent training in the PEC, only a few hours (typically 4) are spent on environmental education; a period of time which is not adequate enough for substantial coverage.

The situation appears better when we look at ITE for nursery and primary teachers. In the majority of the university departments providing nursery and primary education courses, an ever increasing interest has been recently manifested, and an attempt has been made to include environmental education in their curriculum as the following shows.

Environmental Education in ITE for Primary Teachers in the Aristotelian University of Thessaloniki

Within the curriculum there are two main courses [1] available with a main objective of preparing teachers to teach environmental education in schools. One of these, called 'Environmental Education', is compulsory and comprises 3 'units' (151 units are needed to get a university degree). Another 3-unit course is 'Environmental Education in Primary School'. This is optional. There are also courses available in 'ecology', in 'social ecology', and in 'health and environment'. Additionally, science teaching contributes to environmental education by offering courses in techniques for working on environmental issues.

The first of the courses, 'environmental education', is taught through lectures and workshops for 3 hours per week through a semester and has the following aims:

- to make students aware of environmental issues, principally such aspects as interconnectedness, controversy, complication, and alternative resolutions;
- to acquire investigation, evaluation and communication skills;
- to make students understand what environmental education is all about, to make them aware of the misconceptions held about environmental education, and also to make them aware of problems connected with the implementation of environmental education;
- to gain experience of the implementation of environmental education through their own practice.

During this course students, working in groups, are involved in investigations, in practical tasks and in planning activities for school practice. Material used in this course comes from what is available (mainly concerned with theoretical aspects) but more specific material, for instance worksheets for the workshops, are produced by the staff.

The second course 'Environmental Education in Primary School', is a follow up to the first and focuses on practice in primary schools. Students work in pairs with children in primary schools for at least 16 hours on an environmental education project. The planning and the implementation of the project is the students' own responsibility, but they are in close contact with the university staff and meet at least once a week.

Barriers in Initial Teacher Education for Environmental Education to Overcome

In terms of the initial education of primary teachers in environmental education, there do not seem to be any unsurmountable obstacles. As initial primary teacher training is taking place in university departments, it has all the benefits of university work concerning flexibility of the curriculum and possibilities on the part of the university teachers to undertake initiatives. It appears that, among university teachers in education departments over the country, there is an increasing interest concerning environmental education. There are, of course, likely to be organizational problems arising from a shortage of staff properly trained for environmental education, a lack of the necessary infrastructure, large numbers of students, and problems in providing sufficient school practice.

Problems concerning the initial training of secondary teachers in environmental education because of the lack of ITE have already been discussed. Under existing circumstances in ITE for secondary teachers the only chance for all secondary teachers to have some training in environmental education before entering the teaching profession is to include environmental education in a more effective way in the curriculum of the Peripheral Educational Centres, which are under ministerial control.

The Place of Environmental Education in the School Curriculum

In Greece the educational system for primary and secondary schools is centrally organized and the school curricula is uniform all over the country. Not only are the same subjects taught, but also the same contents (and in the same order) in all schools by means of prescribed textbooks produced by the Ministry of Education. Because of this, the place of environmental education in school curricula is more or less the same all over the country.

For both primary and secondary education there is special mention of environmental issues in the textbooks that are being currently used, particularly in science and geography. Additionally, in primary schools a subject called 'Study of the environment' is taught. But it is hardly possible to describe the teaching of this content as a *contribution* to environmental education mainly because more or less the usual tradition of teaching and learning is strictly followed (ie inside the classroom, without engaging pupils in practical activities etc.). Clearly, different processes should be followed for the aims of environmental education which go beyond the acquisition of knowledge to the development of skills, and a change of values, attitudes and behaviour. Teachers (particularly in secondary schools) are aware of this and do not count what happens everyday in the classroom as environmental education but adopt projects as means of implementing it.

At the moment there is a remarkable number of teachers implementing environmental education in this way. The majority of these teachers openly express their enthusiasm by becoming involved in environmental education, in spite of the many obstacles they face (an overcrowded curriculum, shortage of time, the bias of some traditionalist headteachers, and the reactions of their own colleges, lack of infrastructure etc.) and their involvement in environmental education comes not only from their interest in the environment but also from their dissatisfaction with the educational system [2]. Thus they see environmental education as a way to further the cause of educational reform. At the moment environmental education is the only educational innovation that does not follow the usual top-down process. Additionally, in recent years an effort has been made by the Ministry of Education [3, 4] to motivate both primary and secondary teachers to undertake initiatives in environmental education by appointing co-ordinators in each region, by organizing seminars for teachers, and by reducing their teaching time by two hours per week. But, although project work is perhaps one of the best ways of delivering environmental education as it is presently conceived, the problem is that environmental education still remains on the periphery of the curriculum and cannot offer a continuous experience for the pupils as it remains on a voluntary basis for teachers. It seems that promoting environmental education in schools will only come as a result of a range of reforms which need to occur simultaneously. These include:

- reorganization of the school curriculum;
- teachers participating in organizing the curriculum;
- the provision of quality training for teachers;
- appropriate training of environmental education co-ordinators.

Roles of Government and Non-governmental Organizations

As a consequence of the fact that the educational system in Greece is centrally controlled, the regulation of educational issues such as teacher education, the publication of the basic school textbooks, and the provision of infrastructure, is mainly the government's own responsibility. In recent years, as the environment has become an issue of public concern, and many projects are supported by national authorities, business enterprises, and the European Union (EU), some NGOs began to get involved in environmental education mainly by producing materials and by organizing seminars for training teachers. However, as there is no tradition for NGO involvement in educational affairs, many of them are not aware of educational processes or even the aims and methodologies of environmental education. As a consequence of this their contribution is usually limited to a focus on the acquisition of knowledge and awareness of environmental problems. The newly founded (1993) 'Association of Teachers for Environmental Education' is a glimmer of hope for more effective impact in delivering environmental education in schools.

Personal Involvement in Environmental Education

The author is primarily involved in the initial training of primary teachers in environmental education. In this field she has organized the development of a process for training students in environmental education with an emphasis on school practice. This fits into the Department's structure for the curriculum through the two courses 'Environmental Education' and 'Environmental Education in Primary School' discussed above.

Responding to the department's need to be engaged in in-service programmes, she has also been engaged in the training of in-service of primary teachers in environmental education [5]. By contributing to seminars organized mainly by the co-ordinators, she contributes to secondary and primary teachers' in-service training in environmental education. The author is responsible for the department's participation in an intensive ERASMUS course (third year of running) with the title "European awareness and Environmental Responsibility", coordinated by Brighton University (UK) in which the Free University of Berlin, Liverpool Institute of Higher Education and Colmar University also participate. Also, apart from her interests in environmental education [6,7,8] she has some research interests in pupils' learning science concepts with relevance to the environment [9].

Relevant Publications

- 1 Papadimitriou, V (1993) 'A research approach in training primary student teachers in environmental education' International Seminar in training teachers in environmental education, University of Patras (in Greek)
- 2 Papadimitriou, V (1993) 'Factors motivating secondary school teachers in getting involved in Environmental Education' Proceedings of the conference on Ecology and Environmental Education, University of Thessaly, Volos (in Greek)
- 3 Ministry of Education (1989) 'School and Environment', Athens
- 4 Ministry of Education – UNESCO (1992) 'A handbook for Environmental Education', Athens (in Greek)
- 5 Papadimitriou, V (1993) 'An action research approach in training in-service primary school teachers in environmental education' 18th ATEE Conference on Teacher Education and Values Education, Lisbon
- 6 Papadimitriou, V (1990) 'Science Education and Environmental Education', *Pedagogiki Epitheorisi*, 1, 51-63 (in Greek)
- 7 Papadimitiou, V & Antoniadou, N (1990) 'A practical approach of environmental education in Primary schools' *Sinchroni Ekpedefsi*, 53, 51-56 (in Greek)
- 8 Papadimitriou, V (1989) 'Issues connected with the implementation of Environmental Education' *Sinchroni Ekpedefsi*, 44, 57-62 (in Greek)
- 9 Papadimitriou, V & Jani, E (1990) 'How Gymnasium Graduates understand the chemical character of the relations between organisms and the environment', *Nea Pedia*, 53, 56-66 (in Greek)

Environmental Education into Initial Teacher Education

Ireland Status Report

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On Environmental Education

At the outset, it must be stated that differing definitions of environmental education create considerable difficulty for any effort to describe the place and status of environmental education in an Irish curricular context. Different educationalists bring differing perspectives to bear on such a task. For some, environmental education is a relatively narrow curricular area comprised of elements of geography, nature study and science where there is an emphasis on coming to a knowledge of one's own environment. For others, it is a much more holistic area which is shot through the entire curriculum and which is characterised by its approach as much as by its content.

The fact that understandings of environmental education seem to grow and develop by the year adds to the difficulty. The movement away from an emphasis on environmental knowledge through skills and attitudes and towards an education which equips our young people with appropriate behaviours and the capacity for effective participation, leads one towards a view of an environmental education that is ever-changing, ever-adapting to new pressures and needs.

The Curriculum of Primary Schools in Ireland

Primary schools in Ireland offer eight years of education, with a pre-formal cycle (two years) of infant education followed by the six formal classes or grades (Class I to VI). During their first two years in the infant classes, children are introduced to the various subjects of the formal curriculum in a relatively informal way, with an emphasis on learning through play. Thereafter, pupils follow a primary school curriculum, originally set down in 1971, which is child-centred rather than subject-centred and which allows teachers a considerable degree of flexibility in timetabling and in teaching method.

The present curriculum is based on the five key principles that:

- 1 schools should promote the full and harmonious development of pupils;
- 2 due allowance should be made for individual differences;
- 3 activity and discovery methods of learning were to be promoted;
- 4 the curriculum should be integrated, without strict subject divisions;
- 5 the environment should be used as a basis for learning and for learning activities.

At primary level, the following range of subjects are included on the curriculum: Irish, English, mathematics, physical education, art, music, social and environmental studies (this subject covers history, geography, civics, nature study and elementary science) and religion. While there are no officially prescribed times for the various subject areas, the guidelines on time which are set out in Table 1 are widely followed.

Subject	Infants 4 to 6 years	I II III 6 to 9 years	IV V VI 9 to 12 years
Irish Language	3.5	5	5
English Language	3	4	4
Mathematics	3	4	3.5
Social & Environmental Studies	1	2.5	3
Art & Crafts	2.5	2.5	2.5
Music	1	1	1
Physical Education	1	1	1
Religious Instruction	2.5	2.5	2.5
Total (Hours)	17.5	22.5	22.5

Table 1 Time (hours) devoted to different aspects of the curriculum

The Place of Environmental Education in the Primary School Curriculum

The area of social and environmental studies was first introduced to Irish primary schools when a new curriculum was devised in 1971. Much of what was incorporated in the new programme drew upon the older separate programmes for history and geography. A new emphasis was placed on civics and nature study. However, in drawing together what might otherwise be disparate areas, the curriculum was indicating the movement towards a more holistic view of knowledge. In addition to allowing new areas of study at primary level, social and environmental studies provided, in a highly structured way, new methodologies which focused on activity and discovery learning, with a particular emphasis on the use of projects as a learning method. The area has now been taught for more than 23 years.

When pupils commence school (at 4/5 years of age) they are introduced to social and environmental studies which at this point is presented as an integrated area in itself, a separate subject but also a basis for environment-based learning right across the curriculum. Research has indicated that four out of five teachers are in agreement with the principle of using the environment as a basis for integrating the curriculum. There is similar support from the Ministry of Education's inspectorate.

As the child progresses through the eight years of primary education (two years of informal work at infant level and six years of formal work), a gradual differentiation takes place, into social education and environmental education in the first place and, in the later years of primary education, into the separate areas of history, civics, geography and elementary science. Even then, however, the intention is that there be integration between these separate areas.

The aims of the programme in social and environmental studies include the following:

- to arouse and stimulate the child's interest in the environment;
- to cultivate a humane attitude to living things;
- to cultivate an inquiring attitude of mind;
- to enable pupils to arrive at general conclusions which will help them to understand and interpret problems in their own environment.

The key aspects of the programme in social and environmental studies cover the following areas: the human environment, animal life, plant life, nature walks and expeditions and the study of natural phenomena in addition to the specific subject areas (history, geography and civics) covered in the senior classes. In planning a programme, each school and each teacher has very considerable flexibility in deciding which topics they wish to teach.

The 1971 Curriculum was subjected to a detailed review during the period 1987 to 1990, and arising from this review, the National Council for Curriculum and Assessment is presently engaged in identifying curricular changes and improvements which might be required.

Recently, at post-primary level, there has also been some positive development in regard to environmental education. A new subject called environmental and social studies is being offered in the junior certificate examinations beginning in 1994. This subject is a product of many years of experimental work based in the Curriculum Centre at Shannon and within the City of Dublin Vocational Education Committee's Curriculum Development Unit where alternative programmes in the humanities and in social and environmental studies were developed. The new subject integrates the traditional disciplines of history, geography and civics in a student-centred thematic approach to learning.

Commentary on Strengths and Weaknesses of Environmental Education in Primary Schools

The short outline presented above offers a basis for reflecting on the position of environmental education in the Irish primary curriculum. The following particular strengths might be noted:

- The fact of our curriculum's 'environmental' focus, introduced at a time when the word environment was scarcely known in educational parlance was innovative and has proven to be

immensely useful through the past three decades. During this time there has been a universal increase in awareness of the environment and of the need for an educational focus on it. This, together with the absence of a tightly prescriptive programme, has given interested teachers the freedom to deal with current environmental issues and concerns as they have emerged.

- There is evidence that social and environmental studies has been firmly favoured as a curricular area by the teaching force in general, both in its introduction and in its implementation.
- There is some evidence to show that environmental education has been successful. For example, a national survey of attitudes to the environment, has shown that the age group which has completed primary education (11 to 15) is twice as likely as the population at large to cite the environment as an issue of concern.

While the above shows that the current position is broadly positive, there are also some grounds for concern in regard to the status and position of environmental education in Ireland in the years ahead.

- There is the continuing problem that lack of an adequate system of in-service education for teachers results in the social and environmental studies programme being delivered by many teachers who have never had the opportunity for any significant in-service support in this area. One consequence of this is that there are significant numbers of teachers who have not had the opportunity to become familiar with current trends in environmental education and its accompanying methodologies.
- When the report of the review body on the primary curriculum was published in 1990, it included a chapter entitled 'social and environmental studies/science', thereby flagging a significant name change. Up to this time, the study of nature (animal life, plant life etc.) has taken place under the general heading of social and environmental education. However, the review body recommended that the existing nature study and elementary science programme should be integrated to form a new science programme. Whether an increased emphasis on science will have detrimental effects on the time and status of current environmental education is unclear at this stage, but those who are committed to an environmental focus realise that a narrowly conceived science programme or a highly prescriptive one might have the effect of shutting down current opportunities for environmental education.
- When, in 1992, a government Green Paper, entitled 'Education for a Changing World', was launched, commitments were made to the improvement of various areas of curricular provision such as science and health education but, amazingly, given that this was the year of UNCED in Rio de Janeiro, there was no specific commitment to environmental education. In fact, the area did not merit more than a tangential reference.

In summary, we may say that environmental education has reached a point within the Irish education sector where it has begun to be seen as a potentially powerful agent for educational and societal change, although it is by no means certain, in the light of present trends that its potential will be realised.

The Status of Environmental Education in Primary Initial Teacher Education

Traditionally, entry to colleges of education has been by open competition using a system which was controlled by the Ministry of Education (known as the Department of Education). In this way, there was state control over the number of entrants into the profession. Teacher education takes place in institutions, traditionally known as training colleges, but now called Colleges of Education. All of these colleges (of which there are five, two major colleges and three small colleges) are linked to the university sector, with different universities granting degrees to the graduates of the various colleges of education.

Teacher education programmes for the primary sector are mostly of three years duration. The teacher qualification for primary teachers is the Bachelor of Education (BEd) degree. This degree combines the academic with the professional. For example, in the case of Mary Immaculate College, students have until 1992 had to study four subjects in their first year. One of these subjects had to be education, a second had to be Irish while the other two subjects were chosen from history, geography,

philosophy, mathematics, music, French and English. In the second and third years of the degree programme, students study only two subjects, one of which must be education. The education course is very broad, covering the pedagogy of the full range of curricular subjects as well as academic components and teaching practice in the schools (twelve weeks teaching in all). Teachers emerge from the college with the BEd qualification which allows holders to teach at any level in the primary system.

Under a new Semester system being introduced in 1994, the amount of time devoted to Social and Environmental Education as a pedagogical area is shown here:

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	(Optional) Semester 6
12 hours	12 hours	10 hours	12 hours	Teaching Practice	(48 hours) (Option)

In the first year (semesters 1 and 2), 24 hours out of a total of approximately 250 taught hours are devoted to the subject 'education'. In the second year, (semesters 3 and 4), 22 hours out of a total of 296 for 'education', are devoted to the pedagogy of social and environmental studies. In the final year, students who opt to follow a curriculum study within the area of social and environmental education [chosen from (a) social and environmental education; (b) social and health education, and (c) development education] may receive a further 48 hours of social and environmental input.

Barriers in Initial Teacher Education for Environmental Education to Overcome

Such barriers as exist are not barriers in environmental education, rather are they problems arising from the nature of the pre-service degree taken by primary teachers in Ireland. Primary teachers are qualified to teach all subject areas on the primary programme. During their pre-service years, students study the full range of pedagogical areas along with academic education (history, sociology, philosophy and psychology), and also take a second academic subject to degree level. This results in a packed timetable, with limited time for developing in depth, the knowledge, skills and attitudes which would be desirable. Within the present limited time provision, student teachers achieve an extraordinarily high standard.

Roles of Government and Non-governmental Organizations

Formal environmental education, such as that which occurs in primary and post-primary schools, takes place under the aegis of the Department of Education. Another government department, the Department of the Environment has, for many years, been a provider of environmental information. The Environmental Information Service (known as ENFO) seeks to promote knowledge and care of the environment through providing access to information. It does not have a formal educational role, however.

Depending on the definition of environmental education that one uses, one finds a large number of organisations, institutions and locations which are involved. They vary from theme parks to study centres located in environmentally sensitive areas, and may include the Irish affiliates of international environmental organisations.

Personal Involvement in Environmental Education

The author is acting Head of Education and senior lecturer in social and environmental education at Mary Immaculate College, Limerick. In addition to pre-service and in-service work in all aspects of social and environmental studies, (ie history, geography, civics and science), he has a particular interest in curricular development, and has been involved in initiating curriculum projects in the areas of development education, health education and science education. His 'development education' interests have led to publications on the developing world, to which he has travelled with groups of Irish teachers, and to publications in this area for use in Irish schools.

He has also been the author of school textbooks for primary schools in the areas of history and geography. More recently, he has contributed to promoting the European dimension in education through programmes such as the Citizenship 2000 programme. In 1991, he organised an international conference on 'Education for Peace', the largest such conference ever held in Ireland. In that same year, he was one of the initiators of the Meitheal programme through which student teachers from

different EU countries have been collaborating to develop a curriculum in the European dimension at primary level. The relevance of the Meitheal as a pedagogical model which represents Europe in microcosm is noted in the European Commission's Green Paper on the European dimension of Education [COM(93) 457 final/29 September 1993].

Relevant Publications

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Environmental Education into Initial Teacher Education

Italy Status Report

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Introduction

In Italy the initial education of teachers is at present undergoing reform and hopefully it will attain the standards required by a multicultural, industrialized country, and by a society deeply influenced by the different media. However, reform comes slowly in comparison with other European countries and its effects will meet constraints: a difficult economic situation, the decrease in the number of students, and the consequent limited recruitment of novice teachers. On the other hand, this situation is favourable for advancing proposals concerning the curriculum for the initial education of teachers, since courses for university degree in educational sciences have yet to be defined.

The Status of Environmental Education in initial Teacher Education

Pre-school and elementary school teachers.

In Italy a university degree is not required for teaching in these two levels of school education (age 4-11). Teachers receive their initial training in a professional higher school called Istituto Magistrale (5 years after the middle school). Many young teachers, though, graduate in the Faculty of Psychology (majoring in education), or they get a certificate in a para-university Institution, Magistero, after a 3-year course following secondary school.

In 1974, Law No. 417, which introduced important structural changes in the school system, stated that the initial training of pre-school and elementary school teachers has to be accomplished at the University level and promoted the experimentation of courses specifically designed for the education of student teachers.

In 1990 Law No. 341, which deals with the re-organization of the university system, has instituted a degree in Educational Sciences. A national framework for the course has been fixed, within which the universities can autonomously design the curricula for the 4-year course. According to the new norms, the training for pre-school teachers and that for elementary school teachers will split at the end of the second year of the course.

The Magistero has been absorbed into the University. Although the future of the law is uncertain, a commission which has been jointly appointed by the Ministry for Scientific Research and the Ministry of Public Education is preparing the necessary 'Propositions' which will allow the Universities to operate. In a seminar which took place in Bologna (15-16 October 1990) a number of universities (Bologna, Trieste, Genova, Bari and the Università Cattolica di Milano) presented the results of the work carried out in the Centri Interdipartimentali di Ricerca Didattica (Inter-Department Centres for Research on Teaching), which were the institutions appointed for coordinating different subject areas, and for designing the programme of studies for teacher education.

Middle and higher school teachers.

Secondary school (age 11-18) teachers have a university education; they graduate in specific subjects, but receive no educational training. Courses in the didactics of single disciplines are not officially included among the options offered to the students, although didactics workshops are presented in the science faculties of a number of Universities. An 'abilitating certificate' acquired through a national competition and examination is required for teaching in schools.

Law No. 341 brought 'Schools of Specialization' into existence, where a 2-year post-graduate training in Education will take place. These Schools are not yet established, but in some Universities (eg Bologna, Genova) post-graduate courses have been designed and trialled.

During the last 20 years in most universities, particularly in the Departments of Physics, faculty members have promoted the organization of multi-disciplinary groups of research on teaching.

Didactics workshops have been the most active areas in the process of innovation of our educational system. They play an active role in the in-service training of teachers and in the support of the activity of the IRRSAE, regional institutions for educational research and experimental practice in the schools.

Courses in ecology or in environmental sciences have been introduced into faculties of natural science during the last few years, but they do not include teacher education programmes in their statutes. Environmental education is not addressed by any course in the faculty of pedagogy or psychology.

The Place of Environmental Education in the School Curriculum and Roles of Government and Non-governmental Organizations

Italian Schools have national programmes at all levels. The last version of the programme for the elementary school (DPR 76, March 1985) presents the pedagogical model which should be the reference framework for the practice of teaching; it defines the aims of educational interventions in each specific knowledge domain (in terms of attitudes, skills and concepts to be developed); it also suggests themes. Among the themes included in the scientific area are: '... the relationships between biological and physical components of the environment, the relationship between human life and environment, information about examples of prevention of risks and conservation of nature The awareness of the advantages and disadvantages that are associated with every human intervention will encourage the development of positive attitudes of respect towards the environment; this should not be confused with a sterile refutation of technological progress'. Environmental education is not mentioned as a separate subject. Similar guidelines are included in the programmes for secondary schools.

The policy of the Ministry of Public Education reflects the widespread opinion of educators, university teachers and of environmentalist associations: ie that environmental education should be considered a perspective on the world and should be included in each of the subject, rather than being seen as a separate line of study. The official documents which have been issued by the Ministry mention 'transversal educations' such as environmental education, health education, nutrition education, peace education, inter-cultural education, and civil education. The Ministry, in order to implement this, has often followed the strategy of finding a compromise between top-down and bottom-up actions, and interventions have been aimed at promoting encounters between active teachers and cultural agencies which can possibly support the most advanced school-based projects. Within the formal centralized framework, teachers are allowed a remarkable amount of freedom to modify topics and methodologies and to experiment with new approaches.

The circumstances of environmental education vary greatly across different schools and different parts of the country. Many initiatives arise and interesting projects grow where the local institutions (local authorities, IRRSAE, associations, universities) are supportive, and where they provide resources in terms of educational aids, transport, facilities, funds, etc.

Where a network of territorial Centres has been created, teachers can find points of contact and the chance for networking with other teachers. During the 1960s many teachers introduced the inquiry-approach into their educational methodology; the local context where the school was situated, and where students were living, became an object of study and part of the curriculum, particularly within compulsory schooling. In general the focus of such approaches was on social and historical aspects.

When the issue of the conservation of nature was raised and stressed by the media, investigations that classes carried out were ecologically-oriented. National Surveys performed by CEDE (European Centre for Education) and by CIREA (Italian Centre for Research in Environmental Education) have documented how describing and interpreting biological and physical components of ecosystems has represented the most common focus within schools. Data show that:

- the highest number of initiatives in environmental education are taken in the middle school;
- teachers of middle and high school students choose educational objectives at a cognitive level;
- primary teachers are more attentive to affective aspects;
- to a large extent, students are involved in actions or in making decisions at a local level.

Some outstanding experiences of school practice have been described in detail; they can offer a challenging basis for reflecting on methods and a rich source for generating ideas about how to integrate instruction with the development of 'civic conscience'.

In past years the prevailing goal of many teachers was to increase the students' awareness of sources of pollution. An understanding of the re-cycling processes has recently assumed a relevant place in teaching units because of the recognized importance of fostering positive rather than negative emotional attitudes in the students. Currently, another change is apparent to agencies which are involved in the training of in-service teachers: the naturalistic approach is no longer dominant, and the analysis of urban environments in terms of ecosystems is becoming a largely diffused topic in school experiences.

A national convention of the IRRSAE took place in December 1993 in order to discuss the state of art of environmental education in the practice of teaching at all levels of education, and to evaluate the effects produced by programmes undertaken to provide teachers with information.

Personal Involvement in Environmental Education

The author is part of a group of researchers who operate in the Educational Psychology Unit of the Institute of Psychology of the National Research Council. Since 1982 the group has been engaged in the study of learning processes and of teaching strategies in science education. Both, school and extra-school educational settings are the targets of our investigations. Teachers collaborate in our research projects and the 'lab' works also as a teachers' centre at the elementary school level.

The thinking strategies used by the children in interpreting the living world, their mental representations and the changes triggered by social negotiations in the school class have been the main focus of our analyses. The organization of the school environment as a community of learners and producers, where the students and the adults share their intellectual resources and experiences is envisaged as an important component of the teaching, and of environmental education as well. The role that technology can play in promoting and supporting the achievement of this goal is one of the objectives of our programmes of research. We are currently working on three projects :

- the design and construction of the National Archives for Environmental Education.

This project is included in a programme of joint actions agreed upon by the Ministry of Education and the Ministry for Environment, which provides the funds. The archives will be part of a computerized network of national laboratories for environmental education, products of school-based experiences, teaching materials prepared by institutions of different kinds, and research reports and articles; proceedings of meetings will be collected and filed in a database. The definition of a Thesaurus for environmental education and the format of the files which will document school experiences are issues of special interest at this stage.

- the design of a database on both natural and urban environments of our country intended for 4th-6th grade students.

The main features of this learning aid are that it will:

- be an open database; only a limited amount of information will be initially stored, and the students themselves will provide data on local environments;
- be included in a BBS so that the schools will be able to exchange and compare informations and to participate in Forum;
- have a 'friendly' interface to assist its interrogation;
- possess a structure which offer guidelines on how to search and organize information about the environment.

- the design of a multimedia hypertext 'Pond' as an example of an ecosystem.

The aim of the research is to assess the potential of multi-media presentations in education, on the assumption that they can offer students models of complex operations of searching for, and organizing, knowledge through non-sequential procedures. The programme uses a combination of different languages (written, graphic, photographic, animation, motion picture); it is dynamic and generates surprising effects; it is interactive, and is made up of small information units. Taken

separately each unit can appear insignificant; however, when put together the units can lead to the construction of different scenarios according to the user's needs or preferences.

Environmental Education and the Initial Education of Teachers

We assume that to incorporate environmental education into the school curriculum means, to some degree, that 'traditional' teaching methods across all subjects will need revision in order to accommodate the necessary confrontation between the complexity of the world and students' thinking, particularly in terms of the processes of knowledge acquisition, and social interaction within the class.

One big change in teachers' attitudes and abilities will consist of accepting the need to give up the protection that many devices in the school system offer, and in becoming more 'adventurous', more capable of coping with the uncertainty of the journey when the exploration is lead by 'the features of the landscape and by the idiosyncrasies of the travellers'.

The simplified content of the textbooks, the pre-defined sequences of activities of the manuals, the safety inside the borders of the school-class, homogeneity as the criterion for ensuring success (homogeneous age of the students, abilities, pedagogical proposals, materials ...), and assessment procedures, are all aspects of the same defensive mechanism which prevents teachers from questioning the relationship between what they teach, what the students know about the world, and what use students can make of what they have been taught.

Teachers, however, reproduce in the class the model(s) with which they have been introduced to, and perhaps indoctrinated with. Will the University be able to offer an education consistent with the image of the adventurous teacher? If environmental education requires the abilities to deal with documents and not with interpreted reality, of finding and integrating conflicting sources of information on the same object, of collaborating with other people in order to carry out projects, of questioning values in relation to concrete actions and situations, then the training can not be done merely through lecturing, or only inside the space of one institution.

Our Universities will be severely challenged by the fulfilment of these kinds of goals. Because their structure is disciplinary, and there is no cultural tradition in environmental education, the innovation of the pedagogical model will be constrained both by available resources, and the large number of students involved.

One possibility to explore might be the setting up of a network of institutions, whose experience and competences in environmental education are made available to each other, where the initial education of teachers might find different opportunities, and the University would have the role of coordinating, supervising, integrating.

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Environmental Education into Initial Teacher Education

Netherlands Status Report

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The History of Environmental Education in the Netherlands and the Roles of Governmental and Non-governmental Organizations

The search for more relevance in education since the early sixties has led to efforts such as the designing of science-technology-society (STS) curricula, which aim at producing outcomes in education which can be effectively used by pupils in their everyday life as responsible citizens. The interest in environmental education in schools developed partially in this way, with environmental education even being seen as a form of STS. The search for relevance can be seen as resulting from the desire for the educational system to have social effects. It can also be explained as the need to motivate pupils for school activities, as pupils show great interest in matters concerning the quality of the environment.

However, the search for more relevance is not sufficient to explain why the importance attached to environmental education has grown so strongly during the past ten years. It would seem that this development, in other countries as well as in the Netherlands, has to do with the recognition of environmental education as a possible instrument in environmental policy. Dutch government documents indicate that environmental education is regarded as an instrument for social regulation of society towards sustainable development and for the conservation of nature. Thus, the government focuses on enabling people to make their own sustainable choices. Expectations about this instrumental role have created a situation in the Netherlands by which considerable funds have recently been provided for the development and implementation of environmental education within formal education programmes.

As in other countries, the call for an organized development of environmental education did not originate in schools. The first initiatives to develop environmental education, both at local and at national level, were taken by non-governmental organisations (NGOs). That did not mean, however, that the NGOs had mutual starting points. Two options for environmental education were distinguished: a green one and a grey one. In the green option, nature studies and the perception of the environment are emphasized with the latter closely connected to nature conservation. It supposes that in doing so we re-define our relationship with nature and that, as a consequence, environmental problems will be solved or prevented. In the grey option, environmental problems are seen primarily as social and political in origin, often being closely connected with social action taking. Thus, environmental problems can only be solved if our society is restructured.

Both options have been represented by different NGOs, and although both options as environmental education contribute to a change of behaviour, they were considered conflicting. Some NGOs were concentrating on nature education, others on environmental education. Over the last 15 years the situation has gradually changed, especially since sustainable development is considered as a mutual goal, shaping our society in the future. Nowadays, formal distinction is no longer made between a green and a grey option on environmental education.

NGOs such as the 'Institute of Environmental Education' (SME) and the 'Institute for the Education of Nature Conservation' (IVN) played, and still play, an important role. Their initial activities were not particularly addressed to formal education. Incorporation of environmental education into school curricula has only been developed in recent years, and is faced with a problem of responsibility: the school system, and particularly each school itself, having its own responsibility to determine its curricula.

Educational policy in the Netherlands is mainly restricted to creating conditions under which schools can take their own responsibility, and only a minimum of instruments are used to guard the quality of

the educational system. Thus, the Dutch government does not interfere in discussions about goals and contents of environmental education at the level of educational policy, and it might be concluded that the pedagogical independence of schools is not affected. At the level of environmental policy, however, the government shows certain preferences concerning the outcomes of education. There may be a conflict if 'relevance of education' is interpreted in terms of specific 'environmentally-sound attitudes and behaviour'. However, relevance can also be seen as strengthening the abilities of pupils to contribute to sustainable development, and in this way, a contribution to environmental policy becomes a challenge for, rather than an attack on, schools.

The Place of Environmental Education in the School Curriculum

The Dutch educational support system has certain characteristics which differ from systems in other European countries. It is independent of the government and advises both government and schools. The following institutions are recognised:

- National Institute for Curriculum Development (SLO)
- National Institute for Educational Measurement (CITO)
- National Institute for Educational Research (SVO)
- 63 School Guidance Centres for primary schools (OBDs)
- three National Pedagogical Centres for secondary schools (LPCs)

No national curriculum exists in the Dutch educational system. The contents and regulations of school examinations are presented by independent committees to the Minister of Education, accepted after agreement by the inspectorate, and finally prescribed to the school system. This procedure offers schools the possibility of developing their own curricula. However, in practice, the curricula in most schools are determined by the books they use. Curriculum development as carried out by the SLO has only limited meaning; the institute is not authorized to develop complete curricula, since educational freedom would be endangered if such curricula were developed by a national institute. Within these boundaries, the SLO focuses on development of:

- examples of teaching materials;
- core curricula at the request of the Minister of Education or of educational/school organizations;
- school curricula at the request of schools.

Concerning environmental education, cooperation between SLO, CITO, SVO, LPCs and NGOs has been strengthened at national level, in order to further the development and implementation of environmental education in primary and secondary education. In 1990, a core curriculum for environmental education was published containing goals and the positions of environmental education in the school curricula. In the core curriculum two lines for the development and implementation of environmental education are outlined:

- environmental education as a cross-curricular issue, to be incorporated in school subjects, according to possibilities indicated in targets and examination programmes;
- environmental education as a school-based issue, to be incorporated in the free space of school time-tables, in line with the policy of school boards and/or school management.

In the Netherlands the possibility of organizing environmental education as a separate subject in primary or secondary education was never seriously discussed. As environmental education should be part of general education, it is considered as a cross-curricular issue, to be infused within and through existing school subjects. For different levels of education the relevant subjects within which to integrate environmental education are shown in Table 1:

Primary education	• biology/science	• history	• geography	• health education
Lower secondary school	• biology	• history	• economics	• physics/chemistry
	• technology	• geography		
Upper secondary school	• biology	• chemistry	• geography	• history
	• physics	• social studies	• economics	

Table 1 Subjects through which environmental education is infused at different stages of schooling

Initiatives for environmental education as a school-based issue are not only taken by schools. A wide array of organizations, ranging from ministries to local action groups take initiatives inviting schools to participate. School-oriented environmental education is mainly concerned with the integration of environmental matters into school policy, in order to increase pupil participation and the concern of the school as a whole for the environment. Activities may include:

- *envirocare*: environmental care of the school; environmental care for organizations is strongly supported by the Ministry of Environment. In line with this policy schools, as organizations, could develop a system for the care of their surroundings, regarding both nature and physical resources. Students participate in management and policy setting of each 'envirocare';
- setting up of projects linked to local, national or international environmental activities. This will strengthen or restore involvement with environmental issues. Students have to explore their possibilities in influencing their environment. It is considered desirable that students play an active role in societal changes.

It is felt that schools which combine school-oriented and subject-oriented environmental education may be expected to achieve the best results. Schools are free to choose where they wish to place the emphasis.

The Status of Environmental Education in Initial Teacher Education

The 1989 National Environmental Policy Plan states that all sectors of education will include environmental education in their respective curricula and targets; and that teacher education institutes should pay more attention to environmental education. So far there have been few incentives from the Dutch government to stimulate environmental education in teacher education. It depends largely on the initiatives of the institutes if, and in what way, environmental education is included in the curricula. The amount of environmental education in initial teacher education varies among the institutes:

- in teacher education for primary education (4-12 years), environmental education tends to be related to subjects or fields of learning;
- in initial teacher education for lower secondary education (12-16 years) didactics tend to be interwoven with education on the subject. Courses in environmental education may integrate didactical elements with subject elements. Students may choose environmental education for a final project;
- in initial teacher education for higher secondary education (16-18 years) environmental education is strictly confined to didactics. On an individual basis, students may investigate elements of environmental education.

Recently the Dutch inspectorate has taken initiatives to survey environmental courses in higher education.

Barriers in Initial Teacher Education for Environmental Education to Overcome Recent reorganisations

During the last five years major reorganisation has restricted course development activities within teacher education institutes for secondary schools.

Conservatism

For a structural introduction to environmental education, school curricula need to be changed. In the Netherlands it is not easy to accomplish changes in education. Teachers tend to stick to their traditional ways of teaching for many years. To overcome these innovation barriers, themes such as 'changing schools' and 'innovation strategies' need to be included in teacher education programmes.

Implications of curriculum development for environmental education

In general, institutes of teacher education have not been far ahead of curriculum development in environmental education for primary and secondary schools. The implementation of recently-designed curricula for schools demands changes in teacher education, and teacher educators need more support (such as post-graduate education) and stimulation in order to integrate more environmental aspects into their existing work, or to develop courses on environmental education.

The need for more research in terminology

The names used in environmental terminology do not always have the same meaning from one subject to another. In order not to be confusing, research is needed to reach agreement.

The gap between subjects

In environmental education in schools, barriers exist between subjects; particularly between science and social studies a large gap exists. There seems to be insufficient basic knowledge to allow us to understand how environmental problems are interwoven with social processes and developments. Initial teacher education needs to pay more attention to the environment in the development of the subject contents, and in the interrelation between subjects. More interdisciplinary courses on the environment are needed.

Towards a demand-dominated market for environmental education in the Netherlands

Environmental education in the Netherlands is not something new. For years, a large number of organisations have produced materials and services in the field of environmental education, often with the help of governmental subsidies. Generally, it has been those organizations which have decided on the need for educational materials and services, the concepts and their execution. It has been established that many of those materials and services – though made with a lot of skill and enthusiasm – one way or the other have not fit readily into the daily work of schools. Therefore, government policy is now to change the supply-dominated market for environmental education into a market that is more dominated by demand.

Henceforth, it has been decided that schools, staff and students should have a much larger influence on the kind of materials and services that are to be developed. In this demand-dominated market, more responsibility will be given to schools and staff who, therefore, will need to keep themselves well informed about developments in society regarding environmental issues. In this way environmental education can give pupils updated knowledge and abilities related to the bio-physical and social background and causes of major problems, thus helping prepare them to take relevant actions to contribute to sustainable development. For teacher education, this implies that courses should prepare students for this responsibility, and offer an insight into the relations between society and environment.

The Limited Education of Teachers for School-orientated Environmental Education

School-oriented environmental education is cross-curricular and mainly concerned with the integration of environmental issues into school policy. School-oriented environmental education could lead to an increase in the involvement of pupils and schools in society. To reach this, knowledge and abilities are needed and will need to be frequently updated at management and staff level. Most subject-based curricula in higher education do not provide special courses on environmental policy or management. Therefore, special courses on school-based environmental education need to be developed for initial teacher education. These courses should be integrated and include environmental care, environmental policy, management, relevant legislation and other relevant themes for school-oriented environmental education.

Personal Involvement in Environmental Education

The author's current work involves the following:

The Department of Environmental Studies

The Faculty of Education of the Hogeschool Rotterdam & Omstreken has a special department for environmental studies, and courses are given to different target groups. Apart from the development of general courses in environmental studies, courses have been developed on more specialistic areas such as environmental management and environmental education. The duration of the courses varies from a few days to a full year programme.

Initial Teacher Education

The Faculty prepares students in a variety of subjects to become teachers in secondary schools. The existing relevant subjects for environmental education are: biology, economics, geography, history, physics, social studies and technology. Within the initial teacher education programme, an optional course on environmental education is offered for students of the above mentioned subjects. The course lasts 16 full weeks. Not only because of the integration of science and social studies, but also because of the participation of students of different subjects, the course may well be called inter-disciplinary. Students combine their subject knowledge in order to work together on environmental issues related to education.

The ATEE working group on environmental education

Involvement in the ATEE (Association for Teacher Education in Europe) working group on environmental education. This new group was established in 1992 and the author is its secretary.

Relevant Publications

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Trommel, J v (1991) 'School-based Environmental Education', (SLO), Enschede

Environmental Education into Initial Teacher Education

Portugal Status Report

Mariana P. Pereira

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Linguistics

The equivalent Portuguese words to environment and milieu are 'ambiente' and 'meio'; the two words are also used together as 'meio ambiente'. The adjective corresponding to the word environmental does not exist in Portuguese, although the word made from 'ambiente' could be 'ambiental'. Although it is currently employed, some people react against its use, recommending the use of the word 'mesológico(a)'.

A simple analysis of the reports on the work carried out on environmental education in Portugal shows the existence of different perspectives on this subject. Sometimes environmental education is taken as an area of studies *on* the environment, where several disciplines make a contribution under a multi-disciplinary or an interdisciplinary approach. It is also taken as the study *of* a concrete topic and its impact on the environment, leading to a plan of action where some solution is envisaged.

The Status of Environmental Education in the School Curriculum

Portugal has participated in international and intergovernmental conferences on environmental education, from the Tbilisi conference to the Rio de Janeiro Earth Summit. In 1992, a committee was created by the Portuguese government to define plans of action and make recommendations for priority actions in environmental education. Among its tasks, the committee was asked to make suggestions about topics and approaches as well as kits to be employed in the recently-created areas in the school curriculum: 'personal and social studies' and 'school forum'. It was asked to present recommendations on content, approaches and resources.

Although formal courses on environmental education are scarce, the inclusion of topics on environmental education is found in several school programmes which have been approved since 1971. In 1975, the area 'natural and social milieu/ environment' was created in the primary curriculum (children aged 6 to 10 years). One of the topics was 'nature'; this topic was replaced, in a programme approved in 1991, by a topic on 'environment'. In 1976, a course on environmental sciences for 9th grade (14 years old pupils) was devised by teachers, under the unifying theme 'matter and energy in the ecosphere', and implemented on a pilot basis. Because of a change in education policy, the course was not fully implemented; eventually, a book was published (Domingos et al., 1982) and slides were produced. This work is seen as highly conceptually demanding for most students. From 1986 a course on 'environmental sciences' was devised, also by teachers, under an interdisciplinary approach (Bento et al., 1988). This course is targeted for adult students following a secondary degree which is equivalent to 9th grade. Guides to 13 units are published and used in schools. For pupils in grades 7 to 9, several disciplines, such as geography, biology and chemistry include topics related to the environment, and these may constitute a vehicle for environmental education. The discipline 'ecology' is currently being taken by 10th grade pupils (15 years olds) following the area of studies 'health'; several textbooks, written by teachers, are published.

In the present decade two of the changes that have been introduced can make a contribution towards the inclusion of environmental education in schools. The first change was in the programmes set out for the science disciplines biology, chemistry and physics for 12th grade (last year of secondary school, 17 year olds). This includes topics focusing on the science-technology-society perspective, and requires approximately 30% of the time of the whole programme. Aspects of environmental education fit naturally in these topics; however, owing to a lack of appropriate suggestions, the scope and the approaches lie in the hands of teachers and pupils.

The second change is the 'school forum' (área-escola) for pupils in all grades; beside the disciplines in their curriculum, pupils have to take a theme and study it in a cross-curricular way. Quite often, aspects of environmental education are chosen for this forum.

The Place of Environmental Education in Teacher Education

In teacher education related to secondary schools, students who will graduate in a teaching' area ('licenciatura em ensino' de) have science courses where topics of a particular science field are related to problems of the environment (eg 'chemistry and environment'; 'geology and environment'). This can be considered a first encounter which enables students to think about relations, and impact, with their environment. In teacher education courses, topics of environmental education are present in some of the work or projects undertaken by students. Those in initial and in-service teacher education use units from science-technology-society projects, among other resource material; some of this includes an environmental education perspective.

A special inter-group project which was carried out in 1987, the International Year of the Environment is worth mentioning. There were seven groups of students in their final (5th) year of the 'licenciatura' in physics and chemistry at the Universidade de Lisboa. Each group carried out one project related to the environment; some of the projects included actions to be taken by the pupils involved. The design, activities and resource materials produced within the different projects were discussed throughout the year in meetings involving all groups. At the end of the school year, these projects were merged under a coherent structure, and a workshop was set up around work-stations for pupils of the schools involved. This is described in an invited paper delivered by Oliveira (1989) at the annual conference on 'Caretakers of the Environment'.

Another aspect of teacher education, concerns the preparation of those who started teaching without any formal education courses; this is done through a specifically-devised course for distance education. In the course for teachers of pupils in the 5th and 6th grades (See Pereira et al., 1992), in the textbook as well as in the corresponding videoprogramme and audioprogramme, a sixth of the material is devoted to 'science teaching and the global understanding of problems'. The focus of the topics is on environmental education – its scope, approach and case studies.

For the implementation of environmental education in teacher education, it seems that the main barrier to be overcome is the 'discipline base' which is traditionally characteristic of work that is usually carried out. Nevertheless, students show a great interest in analysing existing inter-relations with other fields of study closer to their background, and yet they don't seem quite interested in approaching the study of fields that lie further away from their main knowledge and capacities. They show some difficulty in overcoming the difference between 'producing work in environmental education' and 'talking about environmental education'; they also show some difficulty in using and applying a systems approach to the analysis of questions or problems. In smaller universities or institutes it could be easy to take classes with students in team-teaching. In bigger universities this may also be tried out with colleagues from other departments of the university and an inter-disciplinary plan of study and action being devised.

Resources: Materials and Meetings

Materials such as books, games or leaflets are produced by teachers, by government bodies (eg Fernandes, 1981; INamb, 1990), or by non-government bodies. Journals, namely those published by the teacher education institutes 'ESE- Escola Superior de Educação' also devote some issues to environmental education. The fact that recent publications on environmental issues are available in a Portuguese translation, shows the interest and the concern of people to be informed on topics on environment and environmental education. Daily and weekly newspapers frequently publish and discuss articles on aspects, questions, or problems related to the local, regional, and global environment; students and pupils find these articles useful in their work. A book with some of the published news, and a possible approach to be used for their exploration on an educational setting has also published (Público, 1991).

Meetings held throughout the country have offered several opportunities to share the work, as have projects carried out on environmental education by groups in schools, in science or environment clubs, and in other environmental settings. Such meetings are carried out on a local basis, usually by schools, or on a national or regional basis, usually by established organizations (ASPEA, 1993; DGEBS, 1992; INAmb, 1993; UNL, 1987). The journal EA, Educação Ambiental (1987-1993), published since 1987, besides reporting on some of the projects undertaken, also gives some information on most of these meetings.

Research on Environmental Education

Research specifically on environmental education, or related to it, is carried out mainly at the Universidade de Lisboa, and at the Universidade de Aveiro. At MSc and PhD levels, several theses on environmental education have been approved and others are being conducted. Other research carried out on environmental education focuses on concept development (Schaefer et al, 1989).

Curriculum development projects are being developed, both at the national level (Pestana et al., 1991, 1993) and in collaboration with international teams (Holman et al., 1991-1993; Heikkinen and Pestana, 1989-1993; Solomon et al., 1992-1993); workshops for teachers were conducted to disseminate the approaches and materials. Research on the use of one of these projects in Portugal was recently conducted (Pereira, 1993).

Personal Involvement in Environmental Education

Related to the author's work in the initial education of future science teachers, (for grades 7 to 12), there are two main possibilities of carrying out work on environmental education. One possibility is in one of the courses taken by the students on their 4th year. It is a seminar programme, lasting for 13 to 14 weeks, for 3 hours per week on a topic suggested by the lecturer, but without field work with pupils in schools. Among the topics suggested is science-technology-society; this year, additionally, a seminar on environmental education was offered.

The second possibility exists during the teaching practice year (5th year of studies). Student-teachers spend the whole year in a school, where they are supervised by lecturers from the university and by a school teacher. Students are in charge of classes and carry out a project, and both of these offer opportunities for environmental education; both also have some draw-backs. In the first case, there is no field work with pupils. In the second case, students usually find themselves quite confined to the framework sketched out in the school and to the methods used by the school supervisor; consequently, the introduction of environmental education topics and approaches is mostly dependent on activities within the school.

The author's involvement in environmental education started with the work of an MSc research student who was interested in this area of study. Some years later another student presented his MSc thesis on environmental education. With Schaefer (1989) the author undertook a piece of research on conceptual development focusing the concepts of energy and environment; the study of other concepts and their relation may follow.

Another aspect of the work carried out by the author on environmental education with teachers relates to curriculum development. In 1987, as a visiting professor in Fortaleza, Brazil, the author was asked to devise and implement some units for in-service teacher education related to the local course for primary education, 'Environmental education – a question of survival'. In 1988, in Santarém, Portugal, the author was in charge of a project aiming at devising and implementing units for in-service teacher education of pre-school teachers on science topics related to the environment and to experimental ('laboratory') work. Additionally, she is currently involved in three curriculum development projects where environmental aspects are included (Holman et al., 1991-1993; Pestana et al., 1991a & b, 1993; Solomon et al., 1992, 1993); and recently carried out an evaluation on the use of one of these projects in Portugal (Pereira, 1993).

Units Used as Resource Materials in Schools in Teacher Education.

1 'Pesticidas – informação e publicidade' (Pesticides - information and publicity)

Director: Prof. M E M Pestana (Univ. Lisboa)

This is a research and curriculum development project, which began in 1989, sponsored by the Instituto de Inovação Educacional (IIE). A module for teachers of pupils in the primary school (10 - 12 years) was produced. Several communications were presented and workshops were carried out.

2 'Science across Europe', Association for Science Education project (ASE, UK). Director: J. Holman (ASE, UK)

This is a project for the age range 13-19 years, with units developed with a European perspective. Each unit produced since 1991 by teachers from different countries, is available in Portuguese and in 9 other languages (original: English). The units available are: 'Acid rain over Europe', 'Energy at Home', 'Renewable Energy', 'Drinking Water', 'What Did you Eat?'. A unit on 'The Impact of Global Warming' is in preparation.

3 'Energy and Environment in Chemistry Teaching' – IUPAC/UNESCO project.

Directors: H Heikkinen (Univ. Colorado) and M E M Pestana (Univ. Lisboa). This project aims at developing units on topics of world interest, for the age range: 14-19 years (although also used with pupils below 14 years). The units available in Portuguese, in English and in other languages are 'Fuels' and 'Water'.

4 'GOALS project' (Global Oriented Activities in Local Science)

Director: J Solomon (Univ. Oxford). The GOALS project aims at developing units for children in the age range 10 to 12 years. Children are involved in a small research project (making experiments, bibliographic surveys, or questioning people). The results they obtain are then shared with children across the world. Units available in English (original), in Portuguese and in other languages: 'Our Soil'; 'The Weather'.

Relevant Publications

ASPEA (1993, October) *2ª Jornadas Pedagógicas em Educação Ambiental*, Lisboa: ASPEA

Bento, C, Ribeiro (actualmente Castro), M L & Pereira, P M (1988) 'Guia de aprendizagem para a disciplina de Ciências do Ambiente'. Lisboa: Ministério da Educação

DGEBS (1992) 'O nosso projecto educativo: Forum de Projectos' – Aula Magna, Lisboa: DGEBS

Domingos (now Moraes), A M, Pestana, I & Galhardo, L (1982) 'Ciências do Ambiente – Manual do Professor', Lisboa: Gulbenkian

EA, Educação Ambiental (1987-1993), Lisboa: INAmb/IPAmb

Fernandes, J A (1983) 'Manual de Educação Ambiental', Lisboa: Comissão Nacional do Ambiente

Holman, J (Dir.) (1991-1993) 'Science across Europe' – units 1 to 5, Hatfield: ASE

INAmb (1990) 'Ambiente – Textos Básicos', Lisboa: INAmb

INAmb (1993, Outubro). '4º Encontro sobre Educação Ambiental' INAmb, Parque Municipal de Gaia

Oliveira, M (1989) 'Environmental Education in Teacher Training' Book of Abstracts of the Conference 'Caretakers of the Environment', Chicago

Pereira, M P (Coord. com A Bárrios, J M Carmo, J A Contente, M C Duarte, M A Faria, M M M Gomes, M P Pereira & V Oliveira; H Leão, Technologist; M Figueiredo, Audio Director; C Duarte, Video Director) (1992) 'Didáctica das Ciências da Natureza' Lisboa: Universidade Aberta

Pestana, M E M & Pereira, M P (1991a) 'Environnement – le cas des pesticides, l'école élémentaire et la communauté', in A Giordan, J-L Martinand & Ch Souchon (eds.), 'École et médias face aux défis de l'environnement' (pp. 333-337), Paris: Université de Paris VII

Pestana, M E M & Pereira, M P (1991b) 'Pesticidas – uma abordagem na escola primária', *Aprender* (13), 22-25

Pestana, M E M et al. (1993) 'Children and Pesticides – a teaching module for primary school', Proceedings of the 34th IUPAC Congress (p. 944), Beijing

Público (1991) 'Cadernos do Público - nº3', Lisboa: Público

Schaefer, G with Chastrette, M & Pereira, M P (1989) 'Energy and environment - conceptual relations in the minds of students - a three country case study', Paper presented at the Workshop IUPAC/UNESCO 'Energy and environment as related to chemistry teaching', Berkeley: University of Berkeley

Solomon, J et al. (1992-1993) 'GOALS' – Units 1 and 2' Oxford: University of Oxford

UNL (1987) 'Seminário Ensino das Ciências do Ambiente', Almada: Faculdade de Ciências e Tecnologia da UNL

Environmental Education into Initial Teacher Education

Spain Status Report

María Pilar Jiménez-Aleixandre
Universidade de Santiago de Compostela

The Place of Environmental Education in the School Curriculum

The educational system in Spain is undergoing a reform that began to be discussed in 1984, and which, after some partial testing, was approved as a law (LOGSE) in December 1990. The modifications it establishes are to be implemented by stages, so at present two systems coexist: the previous (1970 LGE) and the new one. The main differences in comparison with the LGE affects secondary education in that it will be compulsory until age 16 (before it was only until 14), and will be taught by teachers with a 5-year degree (before, the 12-14 age group was taught by primary teachers).

Other changes relate to the curricula where, in general, an attempt has been made to release it from too much conceptual content, and to emphasize processes and attitudes. The methodological direction given in documents from the Ministry of Education encourages teachers to adopt a broad constructivist framework, and to regard pupils as responsible for their own learning.

It has to be noted that Spain consists of several Autonomous Communities ('Comunidades Autónomas'), and that some of these, like Cataluña, Galicia and the Basque Country, control the educational systems in their own areas; that is, they have to accommodate to the general framework of the LOGSE, but they can modify the detail of the curriculum. For instance, the three Communities mentioned have their own languages which are different from Spanish, and which are co-official languages in each area. This means that these languages are taught as subjects, alongside Spanish which, of course, increases the number of curriculum subjects in these Communities. Some subjects in the curriculum, or all of them, are taught in these language in primary and secondary school and in universities.

One of the novel features of the reformed curricula is the introduction of cross-curricular subjects: one of these is environmental education, but there are others, such as health education, and equal opportunities. The idea behind the introduction of environmental education as a cross-curricular subject is that it should be a dimension in all the other subjects, emphasizing its interdisciplinary character; however, it is specified that environmental education has stronger links with the area called 'knowledge about the environment' (including the social and natural world) in primary education, and to science, geography and history in secondary education. A summary of the place of environmental education in the school curricula can be seen in table 1.

PRIMARY & KINDERGARTEN	SECONDARY
K + grades 1 - 6 (6 to 12 years)	Completion of grades 7 - 10 plus Bac. or vocational training
environmental education as a cross-curriculum subject related to knowledge about the environment	environmental education as a cross-curriculum subject related to science, history & geography

Table 1 Environmental Education in the School Curricula in Spain

Nevertheless, some educational authorities, such as the Department of Education in Galicia (where the University of Santiago is found), decided that environmental education should be an *optional* subject (and not a cross-curricular one) in secondary schools. The author does not agree with this view, because it limits the benefits of environmental education to those pupils who choose it in competition

with other optional subjects such as drawing, computing and the like, instead of being addressed to all pupils as an entitlement.

The Status of Environmental Education in Initial Teacher Education

As a consequence of the educational reforms, teacher education is also undergoing a number of changes. Only modifications to pre-service provision are discussed here, but it should be noted that, in 1984, an ambitious programme of in-service training was launched. This included the creation of Teachers Centres (there are now around 200 across Spain), and the organization of a large number of courses financed by the Ministry of Education. These included some for 'trainer training', which has allowed a majority of teachers to receive some support, together with a link with some of the new pedagogical approaches. Some of these in-service courses have focused on environmental education.

Initial teacher education in Spain is different for primary and secondary teachers. That for *primary* teachers is given in the 'teacher education schools' (Escuelas de Magisterio). The course is three years long with a strong emphasis on pedagogical and psychological subjects, and includes credits in science education and social science education. Following the educational reforms, the curricula for pre-service courses are being changed; in some teacher education schools (for example, Santiago) the process has already been initiated, and will extend to others in the coming years. These changes are resulting in a more flexible curriculum, with a wider range of optional subjects being offered. Environmental education is one such subject, but it will only be offered in particular universities, such as Santiago, rather than them all. Presently, environmental education is introduced through subjects such as science (particularly science methods), as a 'thread'. It is used in practical exercises with students, for example, being the topic for a curriculum development activity, or an outdoor activity.

For *secondary* teachers, existing pre-service preparation has been strongly criticised for placing too much emphasis on academic content, and assigning only a marginal ('complementary') position to professional training. Prospective teachers follow a five-year degree programme in a subject such as biology, chemistry, geography, mathematics, and the like. Such programmes are taught in faculties and structured with a perspective on research. Following this, graduates take a course (one year or less) which results in a 'pedagogical certificate' (CAP). Such courses typically consist of credits in pedagogical and psychological subjects, with most time being assigned to subject-specific teaching methods (or didactics), including a practicum in secondary schools. One of the problems of the CAP is that it can be acquired also by teaching (for instance as a substitute teacher, or in a private school) for one year; another problem is the large number of students who follow the courses (1400 in Santiago this year), as there is no *numerus clausus*. Although it is taught in universities, it has no staff of its own. The organization of the programme is assigned to 'Educational Science Institutes' (ICEs), which are research institutions without teaching staff. Teaching is carried out by a range of teachers, for example, members of the Faculty of Education, or the Teacher Education Schools, or by secondary school teachers.

A new regulation for the CAP, following the reform, is to be issued by the Ministry of Education, and then implemented by each university; but since 1991, when the new regulation was announced, it has been delayed several times. One of the reasons is possibly that fully to include the teaching of the CAP in the Faculties of Education, or in the Teacher Education Schools would call for an increase in the staff; a difficult issue in times of economical difficulties and tight budgets. Meanwhile courses in environmental education have yet to be implemented in most cases. Only in a few places is environmental education seen as a thread along science education. A summary of the status of environmental education in initial teacher education at this moment can be seen in table 2 on the next page.

Roles of Government and Non-governmental Organizations

Environmental education in Spain began in the 1970s as a consequence of the personal involvement of a number of people (especially teachers). This coincided with a wave of innovative activities in schools – many of them set in the framework of discovery learning – and with a critical scrutiny of the then current programmes and practice (which had been associated with dictatorship and non-democratic institutions). This led to a variety of activities, mostly of the type that Lucas (1980) categorizes as *in* or *about* the environment, than *for* the environment, such as outdoor activities or ecology studies. Some institutions supported this trend, with, for instance, the University Autónoma of Madrid (UAM) organizing, in the spring of 1982, the '1st Seminar on ecological studies' collecting experiences in primary and secondary school.

Primary & Kindergarten Teachers	Secondary Teachers
3 year degree including compulsory programmes in science education and the history of education • uses environmental education as a thread • uses environmental education as examples • USC includes environmental education as an option	5 year academic degree (eg in biology, chemistry, geography) plus: • 1 year Pedagogical Certificate (yet to be formalized) • science education and the history of education • may use environmental education as a thread (as in USC)

Table 2 Status of Environmental Education in Initial Teacher Education in Spain. (USC = University of Santiago)

In the autumn of 1982, after the Socialist party came into government, some Ministries underwent restructuring, and a Department for the Environment (Dirección General del Medio Ambiente) was created. This Department organized for the first time a conference on environmental education (1as Jornadas de Educación Ambiental), which was held in Sitges (Barcelona) in 1983. This was followed by further conferences. The Ministry also launched a line of published materials, comprising two collections: one of Monographs and Manuals, which included an annual report about the environment in Spain, and another series on selected topics, such as 'air pollution', 'solid waste', or 'The Atlantic woods'.

This Department for the Environment is the governmental structure that has had the greatest involvement in environmental education. Since 1987, there has been a National Centre for Environmental Education in the Field (Centro Nacional de Educación Ambiental en la Naturaleza) in Valsain (Segovia), with residences, classrooms and laboratories which allow 40,000 people to use it each year; most of these are primary and secondary school pupils, but in-service courses for teachers are also run.

Other government organizations also support environmental education activities, for example, the Ministry of Education (MEC) which runs two 'Field Schools'. In the Autonomous Communities there are also several outdoors centres, run by the Community Department of Education; they also have organized local conferences on environmental education; these have taken place in Galicia since 1988.

The involvement of non-governmental organizations has increased in the last ten years, in coincidence with a rising public awareness about environmental issues. At one level, there are activities organized by institutions: courses and seminars organized by Universities, such as the Master in Environmental Education of the UNED; and courses and published materials of City Councils, for instance booklets about trees in the parks have been published in many cities.

At another level, there is a large number of groups of environmentalists, eg bird-watchers, whale-watchers, some of them local, from a city or town, and some of them national or international, such as ADENA-WWF, or Greenpeace. It is difficult to summarize their activities which range from organizing talks and field trips, to publishing booklets, periodicals, or collaborating with institutions, Councils and schools. A list of relevant publications in Galicia, which includes many published or written by such groups can be found at the end of this paper. The groups also campaign on environmental issues, such as asking for recycling facilities, opposing certain industries (nuclear plants), and they play an important role in raising consciousness about environmental issues in Spain.

Barriers in Initial Teacher Education for Environmental Education to Overcome

As detailed earlier, the main barriers to be overcome have been in the structural problems of Spanish teacher education, particularly in the case of secondary teachers, where the lack of regulation is generating a situation of a great disparity among different universities.

For primary teacher education programmes, it is difficult to introduce environmental education as a compulsory subject, but it can be introduced as an optional one, as in Santiago, providing agreement is reached with colleagues. For secondary teacher education programmes, it will be necessary to wait until the new Certificate is approved, but probably it is also possible to introduce it as an optional subject.

Personal Involvement in Environmental Education

The author's work in environmental education began in 1979 when, as Head of the Science Department in a High School in Vigo (Galicia) she made a proposal to colleagues to restructure the natural sciences programme in the 9th Grade around ecology and field study. As teaching took place on the coast, it was decided that the first field study would be a beach trip. Now it is clear that this approach has some flaws, but it led to a successful programme which continues to be implemented in several schools, to two books: a field guide for studying the beaches in the city, and a number of papers in journals and presentations at conferences. Most important of all, the pupils said they enjoyed the science classes.

In 1984, in the same High School, an interdisciplinary project was implemented. This had an environmental focus involving the subjects of science, social sciences, Spanish, Galician, mathematics and drawing (6 out of 9 subjects taught in the 9th grade), and received support from the Department of Education in the Community. During these years the author and colleagues wrote other materials; for example, guides to be used with local plants, a guide to bird-watching in the city, and materials to encourage the pupils to conduct small inquiries, such as the monitoring of air pollution in the city with lichens as indicators.

In 1987 the author left the High School to work for the Ministry of Education, working as science education advisor in the implementation of the in-service courses for science teachers. During this time the author reported her work at a Council of Europe conference on 'Acidification and Field Studies' held in Sweden.

Since 1988, the author has worked in the Science Education Department in the University of Santiago, and her involvement with environmental education has followed two lines: firstly in teaching, trying to use environmental education as a thread through programmes for 'Science Education for Primary Teachers', and 'Biology Education for Secondary Teachers'. Secondly in research, supervising doctoral research on environmental education in Galicia, coordinating a project, funded by the Ministry of Education, producing curricular materials for the secondary education (12-16), with a focus on human needs (two of the units of this project ACES are: 'Smoke, Noise and Waste' and 'Let's Save Energy!'), and trying to weave environmental education into the science curriculum. The author also belongs to a local environmentalist group, and recently became involved in the project 'Coastwatch', coordinating a group in the teacher education school.

Relevant Publications

The number of published books, papers, leaflets, field guides and other works is extensive. In recent years there have also been books which review the publications in education programmes. Table 3 (on the next page) shows an attempt to classify some of these works which are used in the science education courses – by publisher and by focus. Finally, there are a number of journals with a wide readership in Spanish:

A With a focus on the environment

- Quercus. Naturaleza y medio ambiente.
- El Cárbabo
- Greenpeace. Boletín informativo trimestral (in Spanish)

B With a focus on education, but which publish papers on environmental education

- Enseñanza de las Ciencias
- Investigación en la Escuela
- Cuadernos de Pedagogía
- Aula de Innovación
- Alambique

	XTA. GALICIA (Autonomous Govt.)	UNIVERSITY COUNCILS etc	PUBLISHERS
VOCABULARY	- Léxico Mat, F e Q - Vocabulario Ciencias	- Nomes fauna e flora maríñas	
FIELD GUIDES		- Guía de algas - árbores de Compostela	- Guías Galaxia - Montes e Fontes
FIELD TRIPS	- A paisaxe Cíes	- Visita praia Barcas - Alameda	- Itinerarios Vía Láctea
TEXTBOOKS, UNITS	- Incendios forestais	- Actividades para construí-la Física	- Setestrela - Física Xeral COU
JOURNALS, PERIODICALS	- Cadernos ensino	- Cadernos Museo do Pobo Galego	

Table 3 A Classification of Works on Environmental Issues in Galicia

Environmental Education into Initial Teacher Education

United Kingdom Status Report

Chris Oulton
University of Bath

Introduction: Changes to Teacher Education in England and Wales²

Initial Teacher Education (ITE) in England and Wales within the UK is currently in a period of major change. Government circulars (eg DES, 1992) set out a number of criteria which courses preparing teachers for secondary schools (11-18) have to comply with by September 1994. These changes include novice teachers spending two thirds of the course in schools, and teachers taking the lead in the planning and management of courses and the assessment of novice teachers' work. Similar shifts towards school-based programmes are proposed for courses preparing teachers for primary schools (5-11). The Government is also experimenting with secondary training programmes which are entirely school-based. A recent consultation paper (DfE, 1993)³ indicates changes to the financing and accreditation procedures for ITE which may encourage more schools to take on initial training with the exclusion of higher education institutions.

The following notes are, therefore, written at a time of great uncertainty when the future of ITE in England and Wales is far from clear and thus the position of environmental education within ITE is difficult to state with much precision. Nothing in the proposed changes to ITE suggests that environmental education will gain greater prominence in the future.

The Place of Environmental Education in the School Curriculum

The UK commitment to the joint statement by the European Council of Ministers that environmental education should form part of the education of persons at all levels in education (EC, 1990), the commitment to promote environmental education made in the White Paper on the Environment (DOE, 1990) and the establishment of environmental education as a 'cross-curricular theme' in the National Curriculum for England and Wales (NCC, 1990) are important steps forward for the development of environmental education in UK. Taken at face value, this should mean that all pupils from 5-16 will receive a comprehensive programme of environmental education. Curriculum Guidance 7, (NCC, 1990) using the well rehearsed formula of education *about*, *in* and *for* the environment, sets out the way in which this may be achieved through the contribution of individual subjects and by the development of a co-ordinated policy across both the formal and non-formal aspects of the school as a whole. More recently, a similar document for Wales (WJEC, 1992) has developed these ideas in the light of the debate about sustainability which began at the Earth Summit in Rio.

In reality, the English and Welsh National Curriculum documentation for environmental education, unlike that for subjects such as English and science, is non-statutory. That is, it is guidance to schools about what they *should* do, rather than what they *must* do. Therefore, when one looks at individual schools, the response in terms of environmental education is very varied. Some schools have appointed environmental education co-ordinators who have initiated audits of the curriculum to identify current practice and thus begin to plan a co-ordinated programme. Other schools have worked at developing school grounds, or set up whole-school projects focusing on issues such as recycling. However, an unpublished survey carried out in a small group of schools in the Bath area, suggests that these individuals are frequently working in isolation with little or no support from either within the school or from external agencies.

In other schools, it is clear that little or no attention is being given to environmental education. The impediments to development in this area are all too familiar (Parry, 1988). No national data giving an overall picture of schools' responses is available. A personal summary would suggest that, whilst some teachers are carrying out effective environmental education strategies, and a few schools are

Notes

² Education and teacher education systems in Scotland and Northern Ireland are separate, and often markedly different.

³ The Department of Education and Science (DES) has been renamed the Department for Education (DfE).

beginning to consider whole-school strategies, in many schools the vast majority of pupils are not currently receiving a comprehensive environmental education experience.

The Status of Environmental Education in Initial Teacher Education

Commitments, at the national and international level, to promote environmental education in schools, are not always translated into policy relating to teacher education. Currently, all English and Welsh initial teacher education courses must comply with criteria set out by the government (eg DES, 1989). The Council for the Accreditation of Teacher Education⁴ (CATE) uses these criteria in its task of advising the Secretaries of State on the approval of courses. The criteria state that *"On completion of their course, students should be aware of the links and common ground between subjects and be able to incorporate in their teaching cross-curricular dimensions, themes and skills."*

Read in isolation this statement might be taken to imply the sort of commitment to environmental education that we are seeking. Taken in the context of the regulations as a whole, environmental education is seen as a very small component of the total Teacher Education programme. It is not surprising therefore that, when practice is looked at in detail the provision for environmental education in pre-service courses is seen as patchy.

Barriers in Initial Teacher Education for Environmental Education to Overcome

In the report of a national study of the provision for environmental education in all UK teacher education institutions, Williams (1992) lists a number of factors that militate against the effective incorporation of an environmental education dimension in pre-service courses. These include constraints of time, staffing and resources; a lack of experience and expertise amongst staff in respect of the aims, substance and methodology of environmental education; competing priorities, eg environmental education is only one of five cross-curricular themes which need to be addressed by novice teachers; students' own interests and priorities, which may crucially be influenced by their experience in schools; the subject-specific nature of, particularly secondary, training courses which often precludes cross-curricular work.

Despite the problems listed above, examples of good practice were revealed by the survey. Similarly, Oulton (1991), in a small-scale study of one-year science ITE programmes noted that the provision for environmental education ranged from nothing to a carefully planned range of activities.

The shift towards school-based training programmes may present further problems for the development of environmental education. Merely changing the training institution element of the course may not be enough. Williams (1992) and Oulton (1991) have indicated the importance of the influence of the school experience component of the training course in supporting or undermining the novice teachers' preparation in environmental education. Given the beleaguered state of most UK teachers coping with the development of the National Curriculum, the introduction of a non-statutory part of the curriculum, such as environmental education, may well be a low priority. It must be a real concern that, although some institutions of teacher education will raise novice teachers' awareness about the need to develop environmental education within their teaching, the novice teachers themselves may not see positive role models in their own experience of teaching. Nor may they be encouraged to experiment within this area themselves. The incidence of novice teachers in schools being told that they must not deviate from the set lesson plans provided by the school is still all too common.

Roles of Government and Non-governmental Organisations

The role of the UK Government in relation to the development of environmental education in schools and its incorporation into ITE programmes is outlined above. In the UK, many non-governmental organisations exist to promote environmental education both within the formal and the non-formal curriculum. A smaller number of organisations have worked directly to promote the development of environmental education within ITE. The World Wide Fund for Nature (WWF) has now completed its 'Thinking Futures' (TF) project through which it has made available staff-

⁴ CATE is one of the bodies that the Government's consultation paper proposes to disband. In England, some aspect of CATE's work is likely to be incorporated in the work of a new Teacher Training Agency (TTA). What guidance, if any, the TTA will offer on the incorporation of EE in ITE is not yet clear.

development grants to six institutions of teacher education across Great Britain. The purposes of TF were to:

- aid critical reflection on the role of the teacher in the light of our current environmental predicament;
- equip novice teachers with insight into approaches to education which will help individuals resolve this predicament.

The University of Bath has been in receipt of one of these grants⁵. WWF has also developed in-service materials (WWF, 1993).

Similarly, the Council for Environmental Education (CEE, 1992) has produced in-service materials on an introduction to environmental education in a range of curriculum areas. Although aimed at in-service work, these materials provide a good resource for initial training programmes. CEE is now preparing a unit, within this series, aimed at initial teacher education. The author is a member of the working party preparing these materials.

Personal Involvement in Environmental Education

The author taught science, applied biology and environmental science in secondary schools for fourteen years. For the last five years he has worked as a lecturer in science education within the School of Education at the University of Bath. His work includes teaching on the one-year Postgraduate Certificate in Education (PGCE) science programme. Within that programme he has particular responsibility for the Environmental Science Specialist course and for the development of environmental education across the PGCE as a whole (for more details see Oulton, C.R. and Scott, W.A.H., 1993). The author is co-convenor of the University's *Environmental Education Research Group*. This group focuses on research into incorporating environmental education into ITE, the evaluation of environmental education, the relationship between environmental education and industrial and economic understanding and values and environmental education. He is also Chair of the Association for Teacher Education in Europe (ATEE) Working Group 17: Environmental Education, and is Editor of *Environmental Education Research* a new academic journal which will be first published in 1995 (see Appendix 6).

Relevant Publications

Environmental Education, (1992), *INSET for Environmental Education 5-16 & INSET 5-16 Environmental Education for Science*. Harlow, Longman

DES, (1989) 'Initial Teacher Education: Approval of Courses' (Circular 24/89), London, HMSO

DES, (1992) 'Reform of Initial Teacher Training. A Consultation Document', London, DES

DfE, (1993) 'The Government's Proposals for the Reform of Initial Teacher Education', London, DfE

DOE, (1990) 'This Common Inheritance', London HMSO

EC, (1990) 'Resolution of the Council and the Ministers of Education meeting with the Council, Environmental Education (88/C177/03)', EC, 24 May 1990

NCC, (1990) 'Curriculum Guidance 7: Environmental Education', York, National Curriculum Council

Oulton, C R (1991) 'Environmental Education and Initial Teacher Education', *Annual Review of Environmental Education*, 4, 17-19

Oulton, C R and Scott, W A H (in press), 'Preparing Science Teachers to Make a Contribution to Environmental Education', *Journal of Teacher Development*

⁵ A book detailing each of the six projects will be published by WWF in 1994.

Parry, M (1988) 'Planning and Implementing Environmental Curriculum Initiatives in Primary and Secondary Schools in England and Wales', Wolverhampton, NAEF

Williams, R (1992) 'Environmental Education and Teacher education - Preparing for Change and Participation': Occasional paper 3, Education Network for Environment and Development, Brighton, University of Sussex

WJEC, (1992) 'Advisory paper 17: Environmental Education' Cardiff, WJEC

WWF (1993) 'Reaching Out: In-service Environmental Education and the National Curriculum', Godalming, WWF

Section Four

Environmental Education in Project Institutions

Programme Descriptors

Introduction

The following pages provide some background to the institutions in which Country Project Representatives (CPRs) work; specifically, they describe the environmental education programme which is the focus of Project activities, and set out basic information about the pre-service courses in which the programmes take place. The data provided are particular to the named institution, and should not be taken as generally representative of teacher education programmes within the country as a whole, or a particular region.

Anyone requiring more details of either the institution, the pre-service course, the environmental education programme or the work of the project should contact the CPR. Details of institutions and fax numbers can be found in Appendix 1.

Details are provided here in the following order:

Country	CRP	Institution	Page
• Belgium	Ronald Soetaert Kathlene Van Heule	Universiteit Gent	59
• Denmark	Torsten Enemærke	Odense Seminarium	61
• France	Claudio Rubiliani Michel Caillon	IUFM de Poitou-Charantes	63
• Germany	Klaus-E Jaritz	Ped. Hochschule, Erfurt	65
• Greece	Vasiliki Papadimitriou	Aristotelian University of Thessaloniki	67
• Ireland	Peadar Cremin	Mary Immaculate College, Limerick	69
• Netherlands	Wieneke Lutgerhorst	Hogeschool Rotterdam & Omstreken	71
• Portugal	Mariana P Pereira	Dep. Educação - Fac. Ciências - Univ. Lisboa	73
• Spain	María Pilar Jiménez-Aleixandre	Universidade de Santiago de Compostela	75
• UK	Chris Oulton	University of Bath	77

Please note that data are currently not available for Italy and Luxembourg

Belgium

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Belgium
Region	Flemish Community
Name of Institution	University of Gent, Department of Teacher Education
Title of Course	Academic Teacher Training (Aggregatie voor het Onderwijs)
Age Range (of pupils taught)	14 – 18; and higher education (18+)
Qualifications Needed (to enter the course)	University Certificate (1st. Cycle)
Qualification Gained (as a result of the Course)	Qualified Teacher's Degree (Geaggregeerde voor het Onderwijs)
Number of Students (on the Course this year)	514
Course Length	26 weeks
Time Spent in School	1 week placement, with additional time spent on observation and practice lessons
Duration of Course	1 October to 30 April (plus an additional time spent on reflection, and on preparing for examinations)

Pattern of Course	1st Semester	2nd semester	Total Hours/year
<i>Empirical Pedagogics</i>	10 sessions	–	15
<i>History of Upbringing and Education</i>	–	10 sessions	15
<i>General Didactics</i>	10 sessions	5 sessions	22.5
<i>The Psychology of Adolescence</i>	1 session	1 session	7.5
<i>Subject Didactics (theoretical)</i>	15 sessions	–	30
<i>Subject Didactics (practical)</i>	Seminars, and discussions are held throughout this period		45

Students can attend educational courses as soon as they have completed the first cycle of their University programme. Students can also follow courses after they have left the university.

Particular Characteristics of the Course

Departments all over the country offer similar courses, but each one follows its own mode of organization and course delivery.

Course Approval

Individual lecturers are responsible for the approval of their own programmes. The course as a whole is approved by an assessment committee within the University.

Roles within the Course

Ronald Soetaert teaches specific didactics programmes for Dutch and English (both theory and practice); Kathlene Van Heule works on the didactical and pedagogical aspects of educational studies programmes, with a particular interest in the linkage of theory and practice.

Environmental Education Input into the Course

<i>Title of Programme</i>	Environmental Education
<i>Percentage of students on the course taking this programme?</i>	50% of those taking English, Dutch and Science courses
<i>Contact Hours</i>	During Subject Didactics programmes
<i>Additional Student Directed Working Time (hours)</i>	None

Further Contextualizing Information

The Pre-service Course

This programme is in an early experimental phase. In different subject areas (currently, language, philosophy, arts, and literature) there are two particular foci:

- investigations of the problematic nature of human interaction with nature
- action research focusing on interactions between pupils and teachers on this topic.

Denmark

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Denmark
Region	Fyn
Name of Institution	Odense Seminarium
Title of Course	Natural, Applied and Environmental Sciences (NAES: a combination of biology, geography, chemistry & physics)
Age Range (of pupils taught)	6 – 16
Qualifications Needed (to enter the course)	Gymnasium baccalaureate (or equivalent)
Qualification Gained (as a result of the Course)	Diploma
Number of Students (on the Course this year)	100
Course Length	1 year
Time Spent in School	none
Duration of Course	August to May

Particular Characteristics of the Course

Departments all over the country offer these courses; Course aims are the same, but each one follows its own syllabus.

Course approval

The course content and methodology is approved by the University. The Ministry of Education needs to be satisfied that the course will deliver agreed course aims.

Role within the course

Torsten Enemærke is deputy director of the Institution; he lectures on the course and is involved in its management.

Environmental Education Input into the Course

Title of Programme	Concept Mapping and Dilemmas
Percentage of students on the course taking this programme?	100
Contact Hours	4
Additional Student Directed Working Time (hours)	none
Pattern of the Programme	This is a typical pattern of activity: 1 Written stimulus material is presented to the students. 2 This is followed up by a lecture in order to clarify ideas and to explore issues in greater depth, e.g possible developments in schools; 3 Students reflect on the inputs in the context of the topics they are currently working on; 4 Further discussions with tutors, particularly relating to pedagogy in schools.

Further Contextualizing Information

The Pre-service Course

Danish Law merely prescribes the objectives of a course; it is up to each institution to decide on methods and approaches which will realize those objectives, and on the form any examination will take.

This natural science programme is new (first introduced 1992/93) and it is too early to say how effective it is proving as a means of introducing Environmental Education into courses.

The Environmental Education Programme

Environmental Education is not a specific *subject* in teacher education programmes. The word 'Environment' (miljø) is only found in one of the articles setting out the course objectives; its main reference is to the notion of 'surroundings' rather than to 'Environmental Education' per se.

Environmental Education can be introduced to the course through natural science and social science programmes.

France

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	France
Region (if appropriate)	Poitou-Charentes
Name of Institution	IUFM
Title of Course	'Environmental Education' Module
Age Range (of pupils taught)	3 – 18
Qualifications Needed (to enter the course)	Licence (or three-year University qualification) <i>and</i> the first part of the 'National Qualification Competitive Examination' to become a teacher
Qualification Gained (as a result of the Course)	Qualified Teacher Status
Number of Students (on the Course this year)	150
Course Length	2 years
Time Spent in School	25 weeks
Duration of Course	September to July

Pattern of Course

The course is divided into four components:

- Initial education – the concept map of 'environment';
- Methodological approaches – how to introduce an environmental dimension into an established project;
- The development of a small project – encounters with governmental and non-governmental organizations;
- The synthesis of each project, and their final evaluation.

Particular Characteristics of the course

Each IUFM has its own optional module programme. This module on Environmental Education is specific to the Poitou-Charentes region. Some other IUFMs have similar modules but with distinct organization and focus.

Course approval

The IUFM general programme is approved by the Education (University) Ministry and revised every two years. The module's contents are approved by the 'Council of Research and Pedagogy' within the IUFM.

Role within the course

Claudio Rubiliani co-ordinates the Environmental Education module for the four departments of the region; he teaches on these modules in Poitiers and Niort. Michel Caillon is Director of the Poitou-Charentes IUFM.

Environmental Education Input into the Course

Title of Programme	Environmental Science
Percentage of students on the course taking this programme?	25%
Contact Hours	20
Additional Student Directed Working Time (hours)	None

Pattern of the Programme

The pattern of the programme varies between different IUFM centres. It could, for example, be a number of two or three-hour sessions; or a series of whole-day workshops.

Further Contextualizing Information

The Environmental Education Programme

Some students choose Environmental Education as the focus for their 'professional memoir'. This is a report on a professional experience which is required for completing the final examination during the second year of the course.

Germany

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Germany
Region (if appropriate)	Thüringen
Name of Institution	Pädagogische Hochschule Erfurt / Mühlhausen
Title of Course	Lehramt an Grundschule (primary) Lehramt an Regalschule (secondary)
Age Range (of pupils taught)	6 – 10 and 10 – 16
Qualifications Needed (to enter the course)	Abitur
Qualification Gained (as a result of the Course)	First Government Examination of the Teacher Students
Number of Students (on the Course this year)	200
Course Length	5 years
Time Spent in School	8 weeks
Duration of Course	October to July (each year)

Pattern of Course The five-year course prepares students to teach two subjects, with a chance for students to study additional ones. It comprises a study of these subjects are also includes: pedagogical and psychological issues. It is accompanied by three different forms of practicum and offers the change to follow extension studies, for example, 'energy and environment'.

This University-based course is followed by a two-year school-based period which ends with the Second Government Examination. Following this, students are fully qualified.

Course approval

The course is approved by the University.

Role within the course

Klaus-E Jaritz lectures in the educational faculty with a particular focus on school pedagogics.

Environmental Education Input into the Course

Title of Programme Mobility among Young People – implications for Social, Historical and Technical Issues

Percentage of students on the course taking this programme? 5%

Contact Hours 15

Additional Student Directed Working Time (hours) 15

Pattern of the Programme

	<i>Year</i>	<i>Length</i>	<i>Note</i>
	2 or 3	1 semester	

Further Contextualizing Information

The Pre-service Course

All teacher education students study:

- two chosen subjects
- educational sciences
- additional study courses (the choice of the student)

In addition, they have a brief practicum in school

The Environmental Education Programme

The environmental education project was offered within the 'educational sciences' programme.

The project 'mobility among young people and the implications for environmental education' is a combination of theoretical and practical work with students working through projects.

Students are prepared to work according to particular structures, but are encouraged to make innovations regarding methods and approaches.

Greece

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Greece
Name of Institution	Aristotelian University of Thessaloniki
Title of Course	Primary Teachers' University Degree
Age Range (of pupils taught)	5 – 12
Qualifications Needed (to enter the course)	Highschool-leaving examinations
Qualification Gained (as a result of the Course)	University Degree of primary Teaching
Number of Students (on the Course this year)	200
Course Length	4 years
Time Spent in School	10 weeks
Duration of Course	September to May (each year)

Pattern of Course The four-year course is made up of units. These include: psychology, sociology, mathematics, science, Greek, art, music, history, geography, philosophy, pedagogics, a foreign language. It includes a school practice.

Particular Characteristics of the course

Primary education departments all over the country offer four-year degree courses, but each one follows its own syllabus.

Course approval

The course is recognised by the Ministry of Education.

Role within the course

Vasso Papadimitriou teaches science and environmental education, and co-ordinates the environmental education units.

Environmental Education Input into the Course

Title of Programme

Environmental Education Units I & II

Percentage of students on the course taking this programme?

Unit I 100%

Unit II 30%

Contact Hours

64

Additional Student Directed Working Time (hours)

20

Pattern of the Programme

<i>Unit</i>	<i>Semester</i>	<i>Length</i>	<i>Note</i>
I	5	12 weeks x 3 Hours/week	This Unit is compulsory and deals with students' own awareness of environmental issues and their understanding of what the theory and practice of environmental education is all about.
II	6, 7 or 8		This an optional follow-up to Unit I. It focuses on students' practice in schools.

Ireland

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Ireland
Name of Institution	Mary Immaculate College, University of Limerick
Title of Course	Bachelor of Education
Age Range (of pupils taught)	4 – 12
Qualifications Needed (to enter the course)	School-leaving Certificate with at least 3 honours awards, including Irish, English and another language
Qualification Gained (as a result of the Course)	BEd
Number of Students (on the Course this year)	100
Course Length	3 years (x 33 weeks)
Time Spent in School	12 weeks
Duration of Course	September to June

Pattern of Course There are periods of school experience in each of the three years of the course:

Year 1 (two periods of 2 weeks); Year 2 (two periods of 2 weeks); Year 3 (one period of 4 weeks)

The third-year of the BEd course is organized in three 11-week terms. The first four weeks of the autumn term are spent in schools. The rest of the course is spent in the College. A range of social and environmental topics, normally selected by students themselves, are explored. Topics include: media studies, local environment trails, the teaching of controversial issues, an introduction to environmental organizations, and the world in crisis;

Particular Characteristics of the course

The way in which this course addresses Environmental Education is different from other institutions; Generally Environmental Education is dealt with under headings such as history, geography or science.

Course approval

The Course is currently approved by the national University of Ireland. From 1994, it will be approved by the University of Limerick.

Role within the course

Peadar Cremin is acting Head of the School of Education, and the Director of the Environmental Education course.

Environmental Education Input into the Course

Title of Programme	Social & Environmental Studies
Percentage of students on the course taking this programme?	14
Contact Hours	44
Additional Student Directed Working Time (hours)	Around 40

Further Contextualizing Information

The Environmental Education Programme

Many of the course sessions involve professionals working in areas as diverse as special education, social workers, environmental officers, voluntary organizations.

The Netherlands

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	The Netherlands
Region (if appropriate)	—
Name of Institution	Hogeschool Rotterdam & Omstreken
Title of Course	Teacher Education
Age Range (of pupils taught)	12 – 16
Qualifications Needed (to enter the course)	Senior General Secondary Education (HAVO) or Pre-University Education (VWO)
Qualification Gained (as a result of the Course)	Second-grade Qualification giving the right to teach pupils aged 12 to 16: (years 1 – 4 of HAVO [senior general secondary education] & VWO [pre-university education]; and all years of MAVO [junior general secondary education], LBO [junior general vocational education], and MBO [senior general vocational education])
Number of Students (on the Course this year)	450
Course Length	4 years
Time Spent in School	21 weeks
Duration of Course	1 September to 15 July (42 weeks)

Pattern of Course Each year of the course follows this pattern:

Number of Weeks

<i>Year</i>	<i>Block 1</i>	<i>Block 2</i>	<i>Block 3</i>	<i>Block 4</i>	
	10	10	10	10	Examination

Particular Characteristics of the course

There are no significant differences between similar courses in various institutions.

Course approval

Courses are approved by Boards of Examiners from Hogeschool Rotterdam and by the national Ministry.

Role within the course

Wieneke Lutgerhorst co-ordinates the Environmental Education and Environmental Studies programmes within the institution.

Environmental Education Input into the Course

Title of Programme	Environmental Education and Communication
Percentage of students on the course taking this programme?	5%
Contact Hours	200
Additional Student Directed Working Time (hours)	440 hours
Pattern of the Programme	This programme occurs in Years 3 & 4 of the course during blocks 3 & 4.

Further Contextualizing Information

<i>The Pre-service Course</i>		<i>The Environmental Education Programme</i>	
is offered in the following subjects:		is only available for students following these courses;	
Dutch	English	Dutch	Geography
French	German	History	Social Studies
Turkish	Geography	Economics	Physics
History	Social Studies	Biology	Technology
Educational Theory	General Economics		
Business Economics	Mathematics		
Physics	Biology		
Technology	Art		
Handicrafts	Textural Arts		

Portugal

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Portugal
Name of Institution	University of Lisbon
Title of Course	Licenciatura
Age Range (of pupils taught)	13 – 18
Qualifications Needed (to enter the course)	School-leaving (twelfth-grade) qualification
Qualification Gained (as a result of the Course)	Licenciatura
Number of Students (on the Course this year)	110 (3rd year) 150 (4th year) 60 (5th year)
Course Length	5 years (28 weeks per year, plus 11 weeks of examinations)
Time Spent in School	Around 15 days in year 4; the whole of year 5.
Duration of Course	September to July (each year)

Pattern of Course The first four years of the course comprise units of work which include:

history & philosophy of education, educational psychology, observation and analysis of school practice, pedagogy and school administration, methods of science, thematic seminars, and the studies of teaching methods associated with biology, geology, chemistry, physics, and mathematics.

Year 5 involves school practice.

Particular Characteristics of the Course

This course is similar in structure to others in Portugal. Some other Universities now have Education studies integrated into the course from year 1.

Course approval

The Course is recommended for approval to the Ministry of education by the University Senate.

Role within the course

Mariana Pereira lecturers on the course and supervises students in schools.

Environmental Education Input into the Course

Title of Programme	Thematic seminars
Percentage of students on the course taking this programme?	50%
Contact Hours	40 hours (spread over 14 weeks)
Additional Student Directed Working Time (hours)	3 additional hours per week are allocated when tutors are available to respond to student queries

The content of the programme is:

- concept development (Schaefer approach; allosteric model (Giordan))
- Environmental Education – aims, objects of study, approaches
- Practices of Environmental Education
- STS projects in Environmental Education
- Values in Environmental Education
- Earth – limits and beyond limits

Assessment of the course is based on two pieces of work: [i] an individual assignment based on a newspaper article where students are asked to select and analyse a passage and suggest how it can be used in Environmental Education; [ii] a 'pair' assignment based on the production of Environmental Education resource materials eg a curriculum unit, a simulation or role-play exercise, or the like.

Spain

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	Spain
Region (If appropriate)	Galicia
Name of Institution	University of Santiago de Compostela
Title of Course	Professor EGB (primary & lower secondary teaching)
Age Range (of pupils taught)	6 – 14
Qualifications Needed (to enter the course)	School-leaving (twelfth-grade) qualification
Qualification Gained (as a result of the Course)	Professor of EGB (science specialism)
Number of Students (on the Course this year)	45 (specializing in science)
Course Length	3 years (3 x 31 weeks)
Time Spent in School	10 weeks in year 3
Duration of Course	October to June

Pattern of Course The course comprises the following programmes:

- Year 1* 10 subjects (mainly pedagogical)
- Year 2* 10 subjects including biology, physics, mathematics
- Year 3* 10 subjects including mathematic education & science education (this includes an Environmental Education dimension, and a 10 week practicum)

Particular Characteristics of the course

All courses in the region follow the same pattern.

Course approval

Initially, by the University, and then by a government department.

Role within the course

María Pilar Jiménez-Aleixandre teaches on the science education programme and supervises the curriculum materials which are used by students during the practicum.

Environmental Education Input into the Course

Title of Programme		Science education (with environmental education as a component)
Percentage of students on the course taking this programme?		100%
Contact Hours		12 to 18 hours (from a total of 40 for the whole science programme)
Additional Student Directed Working Time (hours)		a further 12 to 18 hours
Pattern of the Programme		
<i>November</i>	1 week (2 hours)	Presentation of a programme on environmental education; the negotiation of a number of environmental education issues with students who then select two to work on.
<i>December</i>	3 weeks (6 hours)	Students produce concept maps on one of the chosen issues; they then produce a dossier on the topic.
<i>January to March</i>		Practicum experience with 12 & 13 year olds
<i>April & May</i>	6 to 10 hours	Debriefing; reflecting on environmental education problems; evolving new concept maps; Evaluation

Further Contextualizing Information

The Pre-service Course

October 1995 sees the development of a new course which will have environmental education as a separate subject area.

The Environmental Education Programme

The approach adopts the constructivist perspective both in terms of work with students themselves, and in discussing their own work with pupils

United Kingdom

PRE-SERVICE TEACHER EDUCATION COURSE DESCRIPTOR

Country	United Kingdom
Region (if appropriate)	England and Wales only
Name of Institution	University of Bath, School of Education
Title of Course	Post-graduate Certificate in Education (<i>PGCE in Partnership</i>)
Age Range (of pupils taught)	11 – 18
Qualifications Needed (to enter the course)	An appropriate first degree and school-leaving (or equivalent) qualifications in English and Mathematics
Qualification Gained (as a result of the Course)	Post-graduate Certificate (in Education) – PGCE
Number of Students (on the Course this year)	200
Course Length	36 weeks
Time Spent in School	24 weeks
Duration of Course	20 September to 24 June (36 weeks)

Pattern of Course

Autumn		Spring		Summer
<i>Serial 1</i> in the <i>Homeschool</i>	<i>Block 1</i> in the <i>Homeschool</i>	<i>Serial 2</i> in the <i>Homeschool</i>	<i>Block 2</i> in the <i>Complementary School</i>	<i>Serial 3</i> in the <i>Homeschool</i>
Weeks 1 to 8	Weeks 9 to 14	Weeks 14 to 22	Weeks 23 to 29	Weeks 30 to 36
School 3 days/week	School 5 days/week	School 2 days/week	School 5 days/week	School 4 weeks
Bath 2 days/week		Bath 3 days/week		Bath 3 weeks
[Half-term in Bath]		[Half-term in Bath]		[Half-term in Bath]
INDUCTION PHASE		CONSOLIDATION PHASE		EXTENSION PHASE

Particular Characteristics of the course

Bath's is one of the first PGCE courses in the country to follow revised government guidelines (DfE Circular 9/92) to work *in Partnership* with local schools, with two-thirds of students' time spent in schools.

Course approval

Currently, an external Council (CATE) carries out this function. Legislation is pending and this process is currently under discussion in the national Parliament.

Role within the course

Chris Oulton is a science tutor with responsibility for environmental science courses. He also co-ordinates the mentor training programme for teachers working with students in schools within the new PGCE course.

Environmental Education Input into the Course – I

Title of Programme	Environmental Science Specialism
Percentage of students on the PGCE course taking this programme?	8
Contact Hours	44
Additional Student Directed Working Time (hours)	10

Pattern of the Programme

Part of Course	Weeks	No. of Hours
Serial 1	2, 4, 6, 8	4 x 2.75 hours
Serial 2	17, 18, 19, 21	4 x 2.75 hours
Serial 3	30, 33, 35	4 x 5.5 hours

Further Contextualizing Information

The Environmental Education Programme

Bath is one of only three UK universities which specially selects environmental science graduates and trains them to be science teachers.

Environmental Education Input into the Course – II

Title of Programme	Personal & Social Education
Percentage of students on the PGCE course taking this programme?	100
Contact Hours	9
Additional Student Directed Working Time (hours)	3

Pattern of the Programme

Part of Course	Weeks	No. of Hours
Serial 2	15, 16, 17	3 x 3 hours

Further Contextualizing Information

The Environmental Education Programme

This programme deals with five 'cross-curricular themes' of which Environmental Education is one. The programme emphasises common aspects of the themes, and links between them eg decision-making at individual and societal levels, and the importance of values. Students opt to specialize in one theme for part of their programme.

Appendix 1

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Appendix 2

Timetable of Developments

This timeline represents the various stages of the Project

Time Period	Activity	Location
June 1993	Initial meeting of an <i>ad hoc</i> project development group with ATEE	Brussels
July onwards	Identification of CPRs	
September 1993	Further meeting with ATEE and DG XI	Lisbon
October 1993	First EEITE 'Summer University	Elewiti Centre, Brussels
May 1994	Development meeting with ATEE and DG XI	Brussels
July 1994	Second 'Summer University	Santiago de Compostela
August 1994	Publication of 'Environmental Education into Initial Teacher Education in Europe' – The State of the Art': ATEE, Brussels	
September 1994	Development meeting with ATEE; report to ATEE Working Group 17	Prague
October 1984	Project developmental activities continue	
November 1994	Interim report of the work of the project to DG XI	
April 1995	Development meeting with ATEE and DG XI	Brussels
July 1995	Third 'Summer University'	Poitiers
September 1995	Development meeting with ATEE; further report to ATEE Working Group 17	Oslo
October 1995	Project developmental activities continue	

Appendix 3

ATEE Working Group 17 on Environmental Education

In August 1992, at the ATEE conference held in Lahti, Finland, a meeting was held to agree the format of a new interdisciplinary working group on environmental education. Based on the success of its first year, the working group was formally established at the ATEE annual meeting during the Lisbon conference.

Purposes of the Environmental Education Working Group

The purposes of the group are to:

- establish a regular forum for teacher educators with an active interest in environmental education;
- promote research on environmental education in the context of teacher education;
- promote publications in the field of environmental education;
- develop and strengthen links with existing networks, especially EC and UNEP projects;
- relate European environmental education issues to a global context;
- stimulate the development and implementation of curricula for both pre-service and in-service teacher education.

As the title 'working group' suggests, these purposes are achieved through the activities and efforts of members both individually and collectively. The Working Group exists as an 'umbrella' for these activities and, through the annual conference, provides an opportunity to meet together, share ideas and plan new activities.

Working Group Officers

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Appendix 4

Environmental Education Research

Environmental Education Research is a newly formed refereed journal published by Carfax. It is edited from the University of Bath by Chris Oulton.

The journal is, in part, a response to the increased commitment to environmental education, by governments world-wide, as a means of raising awareness and engendering positive attitudes to the environment amongst their populations, a process given added impetus by the Earth Summit in Rio. Environmental issues are a focus for research and development activity across the globe in many fields of endeavour, and environmental education has been a growing aspect of the studies of students in school, post-compulsory and higher education for some years. *Environmental Education Research* will focus on the kind of international, analytical, theory-based approach which is needed if practice is to be developed and extended.

The journal seeks to publish three main types of article. The first of these will be based upon research and development activities relating to the process of environmental education. The focus might be the learner or the experience of the pedagogy itself. These papers will afford researchers the opportunity of reporting first hand, contemporary studies of international significance. The second kind will be more diverse in nature. Papers here might relate to conference reviews, to retrospective analyses of activities in a particular field, to commentaries on policy issues, or to comparative aspects of an environmental education issue. The third will be a critical review of environmental education provision in a particular country or region.

In addition, there will be a review section reinforcing the international nature of the journal by focusing on books, reports, and publications in other media which deal with international environmental issues.

The criteria for acceptance of papers will be that they are analytical and critical, and that the ideas being discussed are transferable to other education systems and cultures, and are accessible to an international audience.

If you are interested in more information please contact Chris Oulton by phone on +44 225 826 826 (ex. 5420), or by fax on +44 225 826 113.

Appendix 5

ENVIRONMENTAL EDUCATION LIST OF REPRESENTATIVES OF THE MEMBER STATES WORKING PARTY

EDUCATION A L'ENVIRONNEMENT LISTE DES REPRESENTANTS DES ETATS MEMBRES GROUPE DE TRAVAIL

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Appendix 6

RESOLUTION OF THE COUNCIL AND THE MINISTERS OF EDUCATION MEETING WITHIN THE COUNCIL ON ENVIRONMENTAL EDUCATION OF 24 MAY 1988 (88/C 177/03)

THE COUNCIL AND THE MINISTERS OF EDUCATION MEETING WITHIN THE COUNCIL,

Aware of the increasing need to protect the environment so as to improve living conditions and ensure the harmonious development of economic activities throughout the Community;

Reaffirm their determination to strengthen, in accordance with the European Community environmental action programmes of 1973, 1977, 1983 and 1987, public awareness of problems relating to the conservation and improvement of the environment by means of appropriate action in the education sphere;

Recall that in accordance with Article 13CR (2) of the Treaty establishing the European Economic Community, requirements relating to the protection of the environment shall be a component of the other policies of the Community and that, in accordance with paragraph 4 and taking into account the factors set out in paragraph 3 of the same article, the Community shall take action in this field to the extent to which the common objectives can be attained better at Community level than at the level of the individual Member States;

Believe that, as stated in the resolution of the Council of the European Communities of 19 October 1987 concerning the continuation and implementation of a European Community policy and action programme on the environment (1987 to 1992), it is important, whilst observing the respective competence of the Community and the Member States to concentrate Community action on certain priority fields, amongst which is the promotion of education and training in environmental matters at the appropriate levels;

Recommend that measures be taken, in accordance with the resolution of the Council and the Ministers of Education meeting within the Council of 9 February 1976, comprising an action programme in the field of

education, with a view to promoting closer relations between systems of education for the purpose of furthering environmental education;

Consider that all sectors of education (pre-school, general and vocational, higher and further education) should make a contribution to carrying out the task of environmental education;

Note the growing demand for staff with specialized knowledge of environmental protection matters and the consequent need to intensify and improve action in the sphere of education, vocational training and advanced education, to respond to this demand;

Agree to establish certain principles concerning environmental education so as to promote the full development of such education throughout the Community;

Point out, bearing in mind action already taken under Community environmental programmes to set up schools' networks as well as action by international Organizations such as the Organization for Economic Cooperation and Development (OECD) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), that concepts of environmental education and measures for their implementation are being developed in all Member States and that it appears appropriate to establish a systematic exchange of information and experience in the Community;

Agree on the need to take concrete steps for the promotion of environmental education, so that this can be intensified in a comprehensive way throughout the Community;

HEREBY ADOPT THE RESOLUTION:

I. OBJECTIVE AND GUIDING PRINCIPLES

The objective of environmental education is to increase the public awareness of the problems in this field, as well as possible solutions, and to lay the foundations for a fully informed and active participation of the individual in the protection of the environment and the prudent and rational use of natural resources. For the achievement of this objective environmental education should take into account particularly the following guiding principles:

- the environment as the common heritage of mankind,
- the common duty of maintaining, protecting and improving the quality of the environment, as a contribution to the protection of human health and the safeguarding of the ecological balance,
- the need for a prudent and rational utilization of natural resources,
- the way in which each individual can, by his own behaviour, particularly as a consumer, contribute to the protection of the environment.

II. MEASURES

The achievement of this objective and implementation of the guiding principles should be promoted both at the level of the Member States and at European Community level.

A. Action to be taken at Member State level

Within the limits of their own specific educational policies and structures, the Member States will make every effort to implement the following measures:

- (a) each Member State, taking account of regional particularities and in cooperation with parents, local bodies and other relevant bodies, should promote the introduction of environmental education in all sectors of education, including vocational training and adult education. It would appear appropriate that its current policy on environmental education should be set out in a document and made available

to schools and other educational institutions.

The document should take account of the fact that environmental education is an interdisciplinary subject of relevance to many fields of teaching;

- (b) for the carrying out of these tasks, it: would appear important for the relevant authorities of the Member States:
 - to give consideration to the basic aims of environmental education when drawing up curricula and organizing interdisciplinary courses,
 - to encourage extracurricular school activities by means of which theoretical knowledge of the environment acquired in school can be put into practice,
 - to take appropriate measures to develop teachers' knowledge of environmental matters in the context of their initial and in-service training.
 - to undertake specific action to provide teachers and pupils with appropriate teaching materials.
 - It would appear appropriate to prepare, implement and improve these priority activities with the help of pilot and research projects;
- (c) specialists who are particularly concerned with environmental problems should, through appropriate vocational training facilities, have the opportunity to acquire new knowledge or bring their knowledge in this field up to date. Relevant environmental content should also be introduced into initial vocational training and university training, with a view to influencing those with future professional responsibilities in a direction which is most favourable to the conservation of the environment and natural resources.

B. Action to be taken at Community level

In order to reinforce the action of the Member States and achieve effective collaboration in this field, the Commission, assisted by a working party of representatives of Member States, appointed by the Commission on the proposal of the Member States concerned, is invited to take the following initiatives:

(a) *Exchange of information*

- production of an inventory of initiatives taken in the Member States and at Community level with a view to facilitating their transposition and systematic comparison.
- organization of meetings, seminars and symposia about aims and methods of environmental education, as well as for examining the specifically European aspects:

(b) *Improvement of the documentation for teachers and pupils*

- measures to place basic documentation on various Community issues in the environment sphere, as well as results of Community research programmes, at the disposal of teachers and pupils,
- organization of summer courses at European institutes of higher education for teaching specialists so as to enable them to exchange experience and identify new methods of teaching in the environment sphere,
- production of a European guide to institutes of higher education offering courses in disciplines concerned with environment problems;

(c) *Incorporation of environmental education into current activities*

- encouragement for initiatives by young people for young people or partnerships in the environment sphere based on the existing Community ad hoc arrangements,
- promotion of meetings between young Europeans on topics of environmental protection through the 'Youth for Europe scheme' (YEs) and the 'Exchanges between young workers' scheme,
- insertion of the topic 'Environmental education' into the 'Study visits for education specialists' (Arion) programme so as to enable a certain number of national, regional or local specialists in environment education to visit another Member State in order to exchange information and improve their work through incorporation of a European dimension,

- encouragement for cooperation between institutes of higher education operating in the environment sphere by using the opportunities offered by the Erasmus programme to promote the mobility of students and European teaching staff and the development of common teaching materials,
- encouragement, in the environment sphere, for cooperation between institutes of higher education and industry as regards training in new technologies by using the Comett programme.

III.

The Education Committee *shall* monitor implementation of the resolution in liaison with the working party on the environment.

IV.

The Council and the Ministers of Education meeting within the Council invite the Education Committee to make an initial report to them within a period of two years following the adaptation of this resolution in the progress of action undertaken in the field of environmental education at Member State and Community level.

V.

The decision relating to the financing by the Community of the action referred to under II.B shall be taken in accordance with the rules and procedures of the Community.

**CONCLUSIONS OF THE COUNCIL
AND THE MINISTERS OF EDUCATION
MEETING WITHIN THE COUNCIL
OF 1 JUNE 1992
on the development of environmental education
(92/C 151/02)**

The Council and the Ministers of Education have taken note of a report presented to them by the Education Committee on the implementation of their resolution of 24 May 1988 on environmental education. They recognize that many positive actions to intensify environmental education have been carried out by the Member States and the Commission.

'Since the resolution was adopted in 1988 the urgency of protecting the environment at all levels has been thrown into even greater relief. there is now wider recognition, both by society and by individuals, of the importance of protecting the environment within the Community in order to bring about better living conditions and balanced and harmonious growth.

Members of the public have a number of crucial roles to play:

- as individuals concerned with the common duty of maintaining, protecting and improving the quality of the environment, as a contribution to the protection of human health and the safeguarding of the ecological balance,
- as direct producers of pollution and waste,
- as consumers of goods and services.

The Dublin European Council of 1990, in its statement on environment issues, emphasized the vital need to improve information to the public and in particular to respond to the interest of young people who are acutely aware of environmental issues.

Education is of major importance in regard to environmental issues. The lines of action for environmental education set out in the 1988 resolution of the Council and the Ministers of Education continue to be relevant; these lines should be pursued and intensified.

In line with the objective and the guiding principles set out in the 1988 resolution, environmental education:

- should be considered an integral and essential part of every European citizen's upbringing,
- should be strengthened as soon as possible at all educational levels,
- should have an interdisciplinary perspective,
- should be considered an important vehicle for linking education institutions to their surrounding community, enhancing pupils' and students' awareness of local environmental issues and of their region's diversity and special features.

Special attention should be given to the intensification of initial and in-service training of teachers in this area.

The Council and Ministers of Education take note with satisfaction that the Commission's fifth action programme refers to the need for better provision of environmental information and education.

They request the Education Committee to make a further report to them on activities in implementation of the 1988 resolution by the end of 1994.

RESOLUTION DU CONSEIL ET DES MINISTRES DE L'EDUCATION REUNIS AU SEIN DU CONSEIL

SUR L'EDUCATION EN MATIERE D'ENVIRONNEMENT

DU 24 Mai 1988

(88/ C 177/ 03)

LE CONSEIL ET LES MINISTRES DE L'EDUCATION REUNIS AU SEIN DU CONSEIL,

Conscients de l'importance croissante que revêt la protection de l'environnement en vue d'améliorer les conditions de vie et d'assurer le développement harmonieux des activités économiques dans l'ensemble de la Communauté,

réaffirment leur volonté de renforcer, conformément aux programmes d'action des Communautés européennes en matière d'environnement de 1973, 1977, 1983 et 1987, la sensibilisation du public aux problèmes relatifs à la sauvegarde et à l'amélioration de l'environnement à travers des actions appropriées dans le domaine de l'éducation;

rappellent que l'article 130 R paragraphe 2 du traité instituant la Communauté économique européenne précise que les exigences en matière de protection de l'environnement sont une composante des autres politiques de la Communauté et que, conformément au paragraphe 4 et en tenant compte des facteurs énumérés au paragraphe 3 du même article, la Communauté agira dans ce domaine dans la mesure où les objectifs communs peuvent être mieux réalisés au niveau communautaire qu'au niveau des Etats membres pris isolément;

déclarent qu'il est important de concentrer, dans le respect des compétences respectives de la Communauté et des Etats membres, l'action communautaire sur certains domaines prioritaires, parmi lesquels la promotion de l'éducation et de la formation en matière d'environnement aux niveaux appropriés, conformément à la résolution du Conseil des Communautés européennes du 19 octobre

1987, concernant la poursuite et la réalisation d'un programme d'action en matière d'environnement (1987-1992);

préconisent la mise en oeuvre de mesures en vue d'améliorer, conformément à la résolution du Conseil et des ministres de l'éducation réunis au sein du Conseil du 9 février 1976, comportant un programme d'action en matière d'éducation, la correspondance entre les systèmes éducatifs, dans le but de l'amélioration de l'éducation à l'environnement;

estiment que tous les secteurs de l'enseignement (préscolaire, général, formation professionnelle, enseignement supérieur, enseignement des adultes) devraient contribuer à remplir la tâche de l'éducation en matière d'environnement;

constatent qu'il existe une demande croissante de personnel ayant des connaissances spécialisées en matière de protection de l'environnement, et qu'il importe de ce fait d'intensifier et d'améliorer les actions entreprises au niveau de l'éducation, de la formation professionnelle et de l'enseignement supérieur, afin de satisfaire à cette demande;

conviennent d'établir certains principes concernant l'éducation en matière d'environnement, afin de favoriser son développement intégral dans l'ensemble de la Communauté;

Soulignent tout en rappelant l'action déjà entreprise au titre de programmes communautaires en matière d'environnement en vue d'établir des réseaux d'écoles ainsi que l'action d'organisations internationales telles que l'organisation de coopération et de développement économiques (OCDE) et l'Organisation des Nations unies pour l'éducation, la science et la culture (UNESCO),

que les concepts relatifs à l'éducation en matière d'environnement et les mesures nécessaires à leur mise en oeuvre sont en train d'être développés dans les Etats membres et qu'il semble opportun d'établir un échange systématique d'informations et d'expériences dans la Communauté;

conviennent de la nécessité d'entreprendre des démarches concrètes pour la promotion de l'éducation en matière d'environnement, de façon à renforcer celle-ci de façon globale dans la Communauté tout entière,

ADOPTENT LA PRESENTE RESOLUTION.

OBJECTIF ET PRINCIPES DIRECTEURS

L'éducation en matière d'environnement a pour objectif de renforcer la sensibilisation des citoyens aux problèmes existant dans ce domaine ainsi qu'aux solutions possibles et de jeter les bases d'une participation à la fois pleinement informée et active des individus dans la protection de l'environnement et de l'usage prudent et rationnel des ressources naturelles. La réalisation de cet objectif requiert que l'éducation en matière d'environnement prenne en considération les principes directeurs suivants:

- l'environnement en tant que patrimoine commun de l'humanité,
- le devoir commun de maintenir, protéger et améliorer la qualité de l'environnement en tant que contribution à la protection de la santé humaine et sauvegarde de l'équilibre écologique,
- la nécessité d'assurer une utilisation rationnelle et prudente des ressources naturelles,
- la façon dont chacun peut contribuer par son comportement, notamment en tant que consommateur, à la protection de l'environnement.

II. ACTIONS

La réalisation de ces objectifs et principes directeurs devrait être promue au niveau des Etats membres et au niveau de la Communauté européenne.

A. Actions à entreprendre au niveau des Etats membres

Dans les limites de leurs propres politiques et structures spécifiques en matière d'éducation, les Etats membres feront tous les efforts nécessaires pour mettre en oeuvre les mesures suivantes:

- a) Chaque Etat membre, en tenant compte des particularismes régionaux et en coopération avec les parents et les organismes locaux et d'autres organismes appropriés, devrait promouvoir l'insertion de l'éducation en matière d'environnement dans tous les secteurs de l'éducation, y compris la formation professionnelle et l'éducation des adultes. Il apparaît opportun de consigner dans un document sa politique actuelle en matière d'éducation à la protection de l'environnement et de mettre ce document à la disposition des écoles et des autres établissements scolaires.

Cela devrait notamment tenir compte du fait que l'éducation en matière d'environnement est un sujet interdisciplinaire entrant dans bien des domaines de l'enseignement.

- b) En vue d'assurer la réalisation de ces tâches, il apparaît important que les autorités compétentes des Etats membres:
 - prennent en considération les objectifs essentiels de l'éducation en matière d'environnement dans l'élaboration des programmes d'enseignement concernés, ainsi que dans l'organisation des cours interdisciplinaires,
 - encouragent des activités périscolaires pour mettre pratiquement à l'essai les connaissances théoriques acquises sur l'environnement,
 - prennent les mesures appropriées afin de développer les connaissances des enseignants en matière d'environnement dans le cadre de leurs formations initiale et continue,

- entreprennent les actions précises afin de mettre à la disposition des enseignants et des élèves le matériel pédagogique adéquat.

Il apparaît opportun de préparer, de mettre en oeuvre et d'améliorer ces activités prioritaires à l'aide de projets pilotes et de recherche.

- c) Des professionnels confrontés tout particulièrement avec les problèmes de l'environnement devraient, à travers des actions de formation professionnelle qui leur seraient offertes, avoir la possibilité d'acquérir des nouvelles connaissances ou de mettre à jour celles déjà acquises. Egalement dans les domaines de la formation professionnelle initiale et de l'enseignement universitaire, à travers l'inclusion de matières importantes concernant l'environnement, L'on devrait parvenir à orienter le comportement des futurs professionnels dans le sens le plus favorable à la sauvegarde de l'environnement et des ressources naturelles.

B. Actions à entreprendre au niveau communautaire

Afin de soutenir l'action des Etats membres et d'aboutir à une collaboration efficace en ce domaine la Commission, assistée par un groupe de travail composé de représentants des Etats membres, nommés par la Commission sur proposition des Etats membres concernés, est invitée à entreprendre les initiatives suivantes:

a) Echange d'informations

- Etablir un inventaire des initiatives entreprises dans les Etats membres et au niveau communautaire, en vue de faciliter leur transfert et leur comparaison systématique,
- organiser des rencontres, séminaires et colloques sur les objectifs et les méthodes de l'éducation en matière d'environnement ainsi que sur la prise en considération des aspects spécifiquement européens.

b) Amélioration de la documentation pour les enseignants et les élèves

- Mettre à la disposition des enseignants et des élèves une documentation de base sur les diverses thématiques communautaires dans le domaine de l'environnement, ainsi que sur les résultats des programmes communautaires de recherche,
- organiser des cours d'été d'établissements d'enseignement supérieur pour des responsables pédagogiques, en vue de leur permettre d'échanger l'expérience acquise et d'identifier de nouvelles voies dans l'éducation à l'environnement,
- élaborer un guide européen de centres d'enseignement supérieur traitant des disciplines intéressées par les problèmes de l'environnement.

c) Insertion de l'éducation en matière d'environnement dans des activités en cours

- Favoriser les initiatives des jeunes en faveur des jeunes ou du partenariat portant sur le domaine de l'environnement en utilisant les actuelles actions communautaires ad hoc,
- faciliter les rencontres des jeunes Européens sur des thèmes de la protection de l'environnement en utilisant les programmes «Jeunesse pour l'Europe (YES)» et - Echange des jeunes travailleurs»,
- insérer dans le programme "Visite d'études pour les spécialistes en éducation" (programme ARION) le thème "L'éducation à l'environnement" en vue de permettre à un certain nombre de responsables nationaux, régionaux ou locaux en éducation à l'environnement, de se rendre dans un autre Etat membre en vue de s'informer réciproquement et d'améliorer leur travaux en y insérant une dimension européenne,
- encourager la coopération entre les institutions d'enseignement supérieur oeuvrant dans le domaine de l'environnement, en utilisant les possibilités offertes par le programme ERASMUS favorisant la mobilité des étudiants et des enseignants européens et le développement

du matériel didactique commun,

- favoriser, dans le domaine de l'environnement, la coopération entre universités et entreprises pour la formation dans les nouvelles technologies en utilisant le programme COMETT.

III.

Le comité de l'éducation suivra son exécution en liaison avec le groupe «environnement».

IV.

Conseil et les ministres de l'éducation réunis au sein du Conseil invitent le comité de l'éducation à établir, dans un délai de deux ans à partir de l'adoption de la présente résolution, un premier rapport sur le déroulement des actions entreprises au niveau des Etats membres et de la Communauté sur l'éducation à l'environnement.

V.

Le financement par la Communauté des actions visées au point II.B et son volume seront arrêtés conformément aux règles et procédures de la Communauté.

CONCLUSIONS DU CONSEIL ET DES MINISTRES DE L'EDUCATION

REUNIS AU SEIN DU CONSEIL du 1er juin 1992

SUR LE DEVELOPPEMENT DE L'EDUCATION EN MATIERE D'ENVIRONNEMENT (92/C 151/02)

Le Conseil et les ministres de l'éducation ont pris acte du rapport que leur a présenté le comité de l'éducation sur la mise en oeuvre de leur résolution du 24 mai 1988 sur l'éducation en matière d'environnement. Ils reconnaissent que de nombreuses actions positives visant à intensifier l'éducation en matière d'environnement ont été menées à bien par les Etats membres et par la Commission.

Depuis l'adoption de la résolution en 1988, l'urgence d'assurer la protection de l'environnement à tous les niveaux est apparue avec encore plus de netteté. Aussi bien la société dans son ensemble que les particuliers sont maintenant davantage convaincus qu'il importe de protéger l'environnement à l'intérieur de la Communauté afin d'améliorer les conditions de vie et d'assurer une croissance équilibrée et harmonieuse.

Les citoyens ont un certain nombre de rôles primordiaux à jouer:

- en tant que particuliers conscients du devoir commun à tous de préserver, de protéger l'environnement et d'en améliorer la qualité, ce qui est une manière de contribuer à la protection de la santé humaine ainsi qu'à la sauvegarde de l'équilibre écologique.
- en tant que responsables directs des pollutions et en tant que producteurs de déchets,
- en tant que consommateurs de biens et de services.

Dans sa déclaration sur l'environnement, le conseil européen de Dublin de 1990 a

souligné la nécessité vitale d'améliorer l'information du public, et notamment de répondre à l'intérêt manifesté par les jeunes, qui ont une conscience aiguë des problèmes d'environnement.

L'éducation revêt une importance de premier ordre pour les problèmes d'environnement. Les lignes d'action pour l'éducation en matière d'environnement énoncées dans la résolution de 1988 du Conseil et des ministres de l'éducation restent entièrement valables; Il conviendrait de poursuivre leur mise en oeuvre et de les approfondir.

Conformément à l'objectif et aux orientations définis dans la résolution de 1988, l'éducation en matière d'environnement:

- devrait être considérée comme une partie intégrante et essentielle de l'éducation de chaque citoyen européen,
- devrait être renforcée dès que possible à tous les niveaux du système éducatif,
- devrait être considérée comme un moyen important d'établir des liens entre les établissements d'enseignement et la Communauté qui les entoure en rendant les élèves et les étudiants plus conscients des problèmes d'environnement qui se posent localement ainsi que de la diversité de leur région et des caractéristiques, qui lui sont propres.

Il convient de veiller particulièrement à développer la formation initiale et le recyclage des enseignants dans ce domaine.

Le Conseil et les ministres de l'éducation notent avec satisfaction que le cinquième programme d'action de la Commission se

réfère au besoin d'un meilleur apport de -
l'information et de l'éducation en matière
d'environnement.

Ils invitent le comité de l'éducation à leur
présenter d'ici à la fin de 1994 un nouveau
rapport sur les activités entreprises pour
mettre en oeuvre la résolution de 1988.

