



RESEARCH AND INNOVATION IN EDUCATION FOR SUSTAINABLE DEVELOPMENT

WIM LAMBRECHTS / JAMES HINDSON (EDITORS)

IMPRINT

RESEARCH AND INNOVATION IN EDUCATION FOR SUSTAINABLE DEVELOPMENT.
EXPLORING COLLABORATIVE NETWORKS, CRITICAL CHARACTERISTICS AND EVALUATION P

JANUARY 2016

ISBN: 978-3-902959-08-9

PUBLISHER:

ENVIRONMENT AND SCHOOL INITIATIVES - ENSI, ZVR-ZAHL 408619713, VIENNA, AUSTRIA

EDITORS: WIM LAMBRECHTS AND JAMES HINDSON

PROOFREAD: WIM LAMBRECHTS

ASSISTANCE: GÜNTHER PFAFFENWIMMER

LAY-OUT: WALTER REITERER

CODES HAS BEEN FUNDED WITH SUPPORT FROM THE EUROPEAN COMMISSION.
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INTRODUCTION:

EDUCATION FOR SUSTAINABLE DEVELOPMENT IN A COMPLEX AND CHANGING WORLD

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EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) HAS BECOME AN IMPORTANT ISSUE IN SOCIETY. THE UNITED NATIONS DECADE FOR ESD (DESD, 2005-2014) HAS ENCOURAGED INNOVATIVE APPROACHES IN EDUCATION IN ORDER TO CONTRIBUTE TO THE SOCIETAL TRANSITION TOWARDS SUSTAINABILITY THROUGH BOTH THE FORMAL EDUCATION SYSTEM AND NON-FORMAL AND INFORMAL LEARNING SETTINGS (BUCKLER AND CREECH, 2014). FURTHERMORE, AS ESD DOES NOT TAKE PLACE IN SEPARATE SILOS, THE INTERCONNECTION OF DIFFERENT STAKEHOLDERS IS ALSO SEEN AS A NECESSITY IN ESD. DURING THE LAST DECADE AN ABUNDANCE OF INITIATIVES HAVE GROWN AT ALL LEVELS IN SOCIETY. GOVERNMENTS HAVE IMPLEMENTED ESD TOPIC IN POLICY BRIEFINGS AND EDUCATORS AND RESEARCHERS HAVE DEVELOPED INITIATIVES FOR CURRICULUM INNOVATION AND THE INTEGRATION OF SUSTAINABILITY COMPETENCES IN SOCIETY PARTNERS HAVE DEVELOPED INITIATIVES TO EMBED ESD IN NON-FORMAL SETTINGS IN SCHOOLS AND TEACHERS WORLDWIDE HAVE STARTED ESD PROJECTS AT THE LOCAL LEVEL ON A VARIETY OF TOPICS.

DESPITE THE ABUNDANCE OF INITIATIVES ESD DEALS WITH A CONCEPTUAL PROBLEM. A MULTITUDE OF DEFINITIONS AND INTERPRETATIONS CIRCULATES ABOUT ESD AND THIS MAKES IT HARD TO UNDERSTAND THE ESSENCE OF THE CONCEPT, LET ALONE EXPLAIN IT TO WHO NEED TO INTEGRATE IT IN THEIR TEACHING. WHILE IT WOULD STRETCH FAR BEYOND THE SCOPE OF THIS INTRODUCTION AND THIS PUBLICATION TO DIVE INTO THE MANY DEFINITIONS AND INTERPRETATIONS OF ESD, IT IS WORTHWHILE TO TAKE A PRAGMATIC APPROACH AND ADOPT A WORKING DEFINITION. THE FOLLOWING MIGHT SUIT THIS PURPOSE: “EDUCATION FOR SUSTAINABLE DEVELOPMENT IS LEARNING TO THINK ABOUT AND WORK TOWARDS A LIVEABLE WORLD, NOW AND IN THE FUTURE, FOR OURSELVES AND FOR OTHERS, HERE AND ELSEWHERE ON THE PLANET” (VAN POECK AND LOONES, 2011, P. 5). THE DEFINITION CLARIFIES THAT ESD IS NOT JUST ADDING SUSTAINABILITY AS AN EXTRA TOPIC TO THE CURRICULUM, BUT RATHER ENABLING LEARNERS TO CONTRIBUTE TO SUSTAINABLE SOCIETIES.

COLLABORATION OF SCHOOLS AND COMMUNITIES FOR SUSTAINABLE DEVELOPMENT (2014). THE OBJECTIVE OF THIS PUBLICATION IS TO PROVIDE COLLABORATIVE EXPERIENCE IN ESD RESEARCH AND INNOVATION. IT PROVIDES A LOOK BACK AT INITIATIVES DURING THE PAST AND AN OUTLOOK ON FUTURE POSSIBILITIES IN THE FIELD OF RESEARCH AND EDUCATION FOR SUSTAINABLE DEVELOPMENT DURING THE GAP.

THE CONTRIBUTORS OF THE CHAPTERS ALL COME FROM DIFFERENT ORGANISATIONS INCLUDING UNIVERSITIES, SECONDARY SCHOOLS, NON-PROFIT ORGANISATIONS AND GOVERNMENTAL BODIES AND IN ITSELF THIS VARIETY DEMONSTRATES THE POSSIBILITIES OF CONNECTING DIFFERENT STAKEHOLDERS THROUGH ESD INITIATIVES. THE AUTHORS ALSO COME FROM A VARIETY OF EUROPEAN COUNTRIES (AUSTRIA, BELGIUM, GERMANY, GREECE, HUNGARY, ITALY, POLAND, SWITZERLAND, UNITED KINGDOM), AS WELL AS SOME SOUTH-EAST ASIAN COUNTRIES (KOREA AND MALAYSIA).

THE BOOK IS DIVIDED INTO FOUR PARTS. PART I. IS DEVOTED TO NETWORKS AND COLLABORATIVE APPROACHES FOR ESD, AND OPENS WITH A CHAPTER ON THE ENSI-NETWORK, WHICH HAS BEEN ACTIVE IN THE FIELD ENVIRONMENTAL EDUCATION (EE) AND ESD FOR THIRTY YEARS. THE SECOND CHAPTER FOCUSES ON AN EXAMPLE OF A STRONG AND MATURE NATIONAL NETWORK FOR ESD, THE AUSTRIAN NETWORK "ECOLOGISING SCHOOLS" (ECOLOG), WHILE THE THIRD CHAPTER PROVIDES INSIGHTS INTO THE PROCESS OF INITIATING A NEW NATIONAL NETWORK: WEECO. CHAPTER 4 DESCRIBES THE ADDED VALUE OF THE GLOBAL NETWORK OF THE REGIONAL CENTRES OF EXPERTISE ON ESD THROUGH A FOCUS ON THE ASIA-PACIFIC REGION. CHAPTERS 5 AND 6 EXAMINE COLLABORATIVE APPROACHES BETWEEN DIFFERENT PARTNERS, WITH CASE STUDIES OF AN INTERGENERATIONAL DIALOGUE IN AUSTRIA AND A LOCAL INITIATIVE FOCUSED ON SUSTAINABLE MANAGEMENT IN ITALY.

PART II. EXPLORES CRITICAL CHARACTERISTICS IN ESD. CHAPTER 7 REFLECTS ON WHAT HAPPENS WHEN ESD DOES NOT PRODUCE THE RESULTS WE EXPECT OR WANT. CHAPTER 8 FOCUSES ON THE ROLE OF EDUCATION IN TIMES OF UNCERTAINTY AND THE NECESSITY OF INTEGRATING LOCAL KNOWLEDGE UNCERTAINTY INTO THE LEARNING PROCESS. CHAPTER 9 PROVIDES AN INTERCULTURAL STUDY OF ESD IN REMOTE COMMUNITIES AND MAKES A CALL TO INTRODUCE PLACE-BASED AND PLACE-CONSCIOUS PEDAGOGIES IN TEACHER EDUCATION. CHAPTER 10 LOOKS AT THE DEVELOPMENT OF POSSIBILITIES OF COMPETENCES FOR SUSTAINABLE DEVELOPMENT IN HIGHER EDUCATION. CHAPTER 11 FURTHER ELABORATES ON THIS TOPIC AND PROVIDES INSIGHTS IN HOW TO DEVELOP YOUNG PEOPLE'S COMPETENCES TO CONTRIBUTE TO THE SUSTAINABILITY TRANSITION. CHAPTER 12 PROVIDES A CASE STUDY IN WHICH LOCAL ECOLOGICAL KNOWLEDGE IS VALUED AND INTEGRATED IN URBAN SCHOOLS IN MALAYSIA.

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ENVIRONMENT AND SCHOOL INITIATIVES A PRECIOUS NETWORK FOR THIRTY

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ENSI HISTORY

ENVIRONMENT AND SCHOOL INITIATIVES (ENSI) WAS SET UP AS A RESEARCH AND DEVELOPMENT PROJECT OF OECD 'S CENTRE FOR EDUCATIONAL RESEARCH & INNOVATION (CERI) FROM 1994 AND CHANGED INTO A DECENTRALIZED INTERNATIONAL NETWORK UNDER THE UMBRELLA OF CERI IN 1995. AS A RESULT OF A REORGANIZATION OF OECD ALL DECENTRALIZED NETWORKS BECAME INDEPENDENT IN 2002 AND ENSI WAS RECOGNIZED AS AN INTERNATIONAL PROFIT-ASSOCIATION IN 2008. ENSI IS NOW AN ASSOCIATION UNDER AUSTRIAN LAW. ENSI IS BASED AT THE MINISTRY FOR EDUCATION AND WOMEN'S AFFAIRS IN VIENNA. THE NETWORK IS FINANCED BY ITS MEMBERS AND THROUGH ITS OWN PROJECT WORK.

ENSI COOPERATES WITH MAJOR INTERNATIONAL ORGANISATIONS SUCH AS UNESCO, UNEP, UNEP (CARPATHIAN CONVENTION), RCE/UN-UNIVERSITIES, CEE INDIA, BALTIC21 AND OTHERS. THE MEMBERS OF ENSI ARE ALL EXPERTS COMING FROM GOVERNMENTS, INTERNATIONAL ORGANISATIONS, INSTITUTIONS SUCH AS UNIVERSITIES, SCHOOLS, NGO'S AND CIVIL SOCIETY. PARTNERS COME MAINLY FROM EUROPE, ASIA AND AUSTRALIA. THE NETWORK'S ORGANISATIONAL STRUCTURE CONSISTS OF A PERMANENT BOARD WITH A SECRETARIAT FOR DAILY BUSINESS AND PROJECT COORDINATION. ENSI PARTNERS COOPERATE ACTIVELY IN PROJECTS PROPOSED TO THE GENERAL ASSEMBLY AND BEING PLANNED AND SUBMITTED BY THE SECRETARIAT IN COOPERATION WITH THE INTERESTED PARTNERS.

THROUGH THESE COLLABORATIVE PROCESSES ENSI'S WORK AND ACTIVITIES ARE DETERMINED BY THE WORKING ENVIRONMENTS AND THE NEEDS OF ITS MEMBERS: THE NETWORK PREPARES STUDIES ON TEACHER EDUCATION, CARRIES OUT RESEARCH AND DEVELOPS GUIDELINES FOR QUALITY-ORIENTED TEACHER EDUCATION. ENSI ALSO ORGANISES STUDIES ON SCHOOL DEVELOPMENT AND EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND DEVELOPS GUIDELINES AND QUALITY CRITERIA THROUGH CROSS ANALYSIS OF THESE STUDIES. ENSI INFLUENCES POLICY DECISIONS AT THE INTERNATIONAL LEVEL BY COMBINING INTERNATIONAL PROCESSES OF QUALITY IMPROVEMENT AND QUALITY IMPROVEMENT AND FORMULATING GUIDELINES AND CRITERIA. IT SUPPORTS

- SCHOOL AND COMMUNITY COLLABORATION FOR SD (CODES, 2011-2014)
- PARTNERSHIP AND PARTICIPATION FOR SD (SUPPORT 2007-2009)
- ESD IN THE CARPATHIAN REGION (CASALEN 2007-2009)
- TEACHER COMPETENCES FOR ESD (CSCT 2004-2007)
- SCHOOL DEVELOPMENT THROUGH ENVIRONMENTAL EDUCATION (SEED 2002-2005)

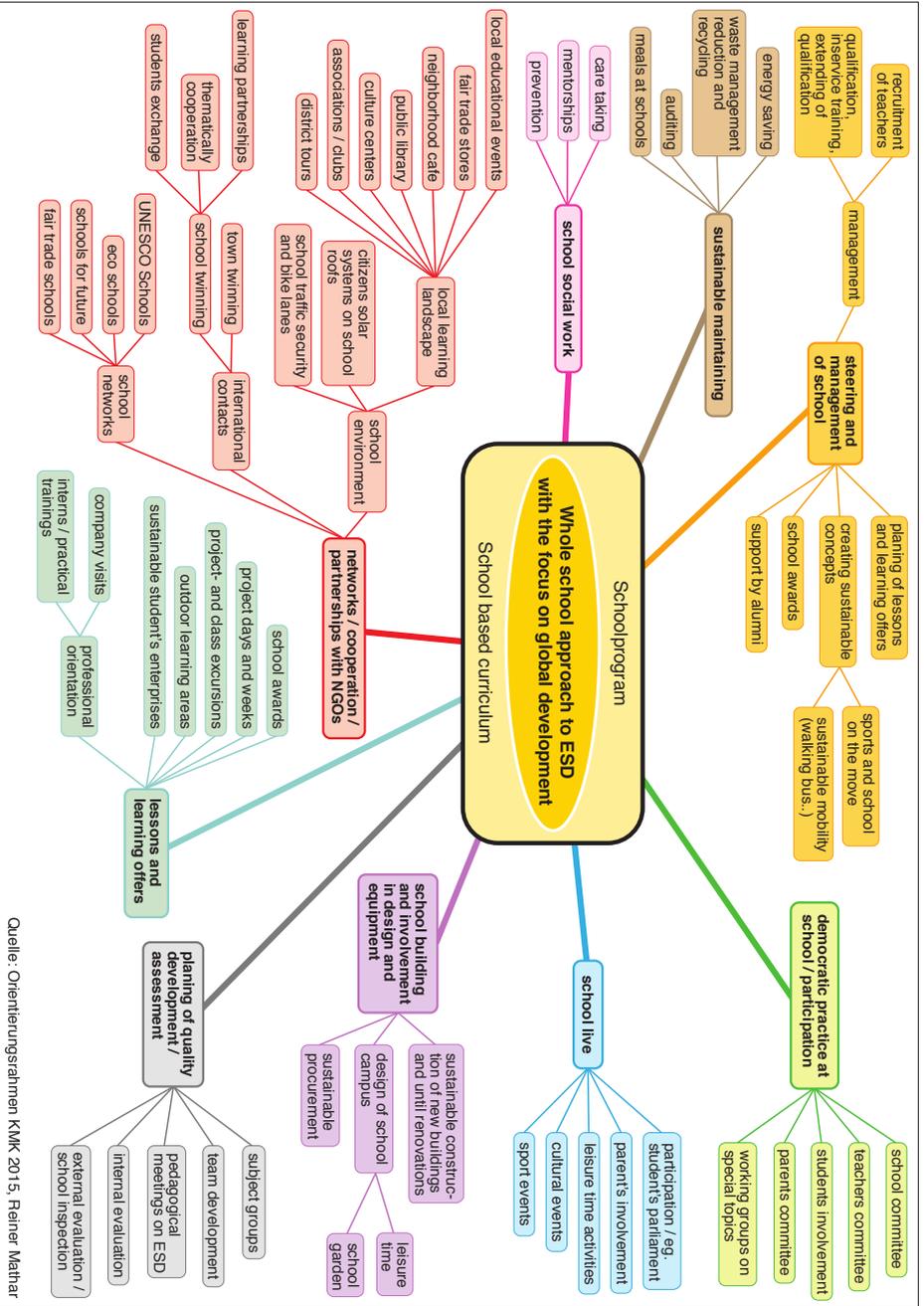
PARTNERS IN THESE PROJECTS CAME FROM THE FOLLOWING COUNTRIES - AUSTRALIA, A BELGIUM/FLANDERS, CANADA, CROATIA, CYPRUS, CZECH REPUBLIC, DENMARK, FIN FRANCE, GERMANY, GREECE, HUNGARY, INDIA, ITALY, JAPAN, REPUBLIC OF KOREA, MALA NETHERLANDS, NORWAY, POLAND, ROMANIA, SERBIA, SLOVAKIA, SLOVENIA, SPAIN/CATA SWEDEN, SWITZERLAND, UNITED KINGDOM, UKRAINE.

THE OUTCOMES OF ALL FIVE PROJECTS HAVE DELIVERED SIGNIFICANT CONTRIBUTIO WORK OF TEACHERS, PRINCIPALS, AUTHORITIES, TEACHER EDUCATORS, STUDENTS AND R PARTNERS.

WHOLE SCHOOL APPROACH - A RED LINE IN ENSI ACTIVITIES FROM THE BEGINNING

IN 2012 A UNESCO REPORT ON THE GLOBAL STATUS OF ESD IS STRONGLY EMPHASIZING ESD HAS TO BUILD UP COMPETENCES FOR A MORE SUSTAINABLE LIFE AND IS NOT TEACH AND LEARNING ABOUT SUSTAINABLE DEVELOPMENT ONLY.

THE CONCEPT OF SUSTAINABLE DEVELOPMENT HAS TO CHANGE THE GENERAL GUID AND CORE ELEMENTS OF SOCIETIES. THAT MEANS ESD IS NOT ABOUT, BUT FOR SUSTAINA DEVELOPMENT. LOOKING AT ESD FROM THIS PERSPECTIVE INTEGRATING TOPICS OF NABLE DEVELOPMENT INTO THE CURRICULUM OF JUST SOME SUBJECTS IS NOT ENOUGH. QUESTION IS, WHAT ARE THE CONTRIBUTIONS OF ALL SUBJECTS AT SCHOOL AND ALL TRA THE VOCATIONAL SECTOR? LEARNERS AND EDUCATORS MUST LINK THE CONCEPT OF SUS DEVELOPMENT TO THEIR SUBJECT AND EVERYDAY PRACTICE OF EDUCATION. THAT INCLUD EDUCATIONAL ORGANISATION OR SCHOOLS AS AN INSTITUTION. HOWEVER, A PREREQUISIT THIS IS THAT SUSTAINABLE DEVELOPMENT SHOULD NOT BE SEEN AS A CLOSED CONCEPT GIVEN SOLUTIONS. IT MUST BE CONSIDERED AS AN ON-GOING PROCESS, FINDING NEW AN BEST SOLUTIONS. THAT'S WHY ESD SHOULD INTRODUCE THE CONCEPT OF LIFE-LONG LEA EVERYONE AT SCHOOL. WHILE CHILDREN STAY AT SCHOOL THEY NEED THE POSSIBILITY T OLP AND REALISE THEIR SPECIFIC CONCEPT OF LIFE-LONG LEARNING. AGAINST THIS BACK THERE IS A NEED FOR CHANGE WITHIN THE WHOLE EDUCATION SECTOR. TEACHING, LEAR STUDENT'S PARTICIPATION AND COOPERATION WITH THE LOCAL COMMUNITY AND PA IN THE SOCIETY ALL NEED TO CHANGE. INSTRUCTION MUST BE REPLACED BY CO-CONSTR BETWEEN STUDENTS, TEACHERS, PARENTS, PARTNER AND EXPERTS FROM OUTSIDE S



Quelle: Orientierungsrahmen KMK 2015, Reiner Mathar

Figure 1. Whole school approach

CODES' OVERARCHING AIM THROUGHOUT THE PROJECT FROM 2011 TO 2014 WAS TO EXPLORE AND PROVIDE MODELS, IDEAS, LEARNING AND TEACHING METHODS, CASE STUDIES, TRIED AND TESTED TOOLS AS WELL AS HELPFUL SUGGESTIONS FOR REFLECTION. A CHALLENGE FOR THIS APPROACH TO A THEMATIC FIELD LIES IN THE DIVERSITY OF STAKEHOLDERS. HENCE THE CODES PROJECT TEAM AS WELL AS IN SCHOOL-COMMUNITY COLLABORATION PROJECTS, STARTED ITS WORK WITH AN INVESTIGATION OF EXISTING SCHOOL-COMMUNITY COLLABORATION, FOCUSING ON THE FACTORS THAT MADE THEM SUCCESSFUL. THE CONTEXT OF THE EXISTING STUDIES AND EXPERIENCE WAS DIVERSE IN TERMS OF STAKEHOLDERS, CULTURAL BACKGROUNDS AND COUNTRIES AND THEREFORE DEMANDED METHODOLOGIES THAT RESPECTED AND ACKNOWLEDGED DIVERSITY, DEVELOPED ITS THEORETICAL BASE AND PRODUCED TOOLS FOR PRACTICAL APPLICATIONS. PROJECT PARTNERS, ALL OF THEM EXPERTS IN THE FIELD OF TEACHING AND LEARNING AS WELL AS COLLABORATION ANALYSED, DEVELOPED AND PILOTTED METHODOLOGICAL MATERIALS FOR COLLABORATIVE PARTNERSHIP PROJECTS. CODES TOOLS FOR SCHOOL-COMMUNITY COLLABORATIONS USED THE QUALITY AREAS FOR SUCH COLLABORATIONS DEVELOPED IN THE PUBLICATION 'KEYSTONES ON SCHOOL-COMMUNITY COLLABORATION FOR SUSTAINABLE DEVELOPMENT' (ESPINET AND ZACHARIOU, 2014). THESE QUALITY AREAS INCLUDE PARTICIPATION, COMMUNICATION, LEARNING, ACTION, VISION, RESOURCES, MANDATES AND RESEARCH. CODES PARTNERS HAVE DEVELOPED THE FOLLOWING PRODUCTS:

- TRAVELLING GUIDE FOR SCHOOL-COMMUNITY COLLABORATIONS FOR SD (HANDBOOK FOR REFLECTIVE PRACTITIONER) (AFFOLTER AND RÉTI, EDs., 2014);
- TOOLBOX FOR SCHOOL-COMMUNITY COLLABORATIONS FOR SUSTAINABLE DEVELOPMENT (METHODS, TECHNIQUES AND TOOLS FOR COLLABORATIONS) (MASO, ED., 2014);
- INTERACTIVE WEBSITE FOR SCHOOL-COMMUNITY COLLABORATION (PLATFORM OF SUPPORT FOR SCHOOL AND COMMUNITY PROJECTS);
- DIGITAL HANDBOOK FOR LOCAL AUTHORITIES FOR SCHOOL-COMMUNITY COLLABORATION (WAGNER-LUPTACIK AND SMITH, 2014);
- PROFILES OF ISOLATED COMMUNITIES AND WAYS INTO INTEGRATION (RESEARCH IN COLLABORATION WITH REMOTE COMMUNITIES) (LIARAKOU ET AL., 2014);
- KEY STONES ON SCHOOL-COMMUNITY COLLABORATION FOR SUSTAINABLE DEVELOPMENT (TOOL FOR REFLECTION ON THE QUALITY OF SCHOOL-COMMUNITY COLLABORATION) (ESPINET AND ZACHARIOU, 2014);
- SELECTED CASES OF SCHOOL-COMMUNITY COLLABORATIONS FOR SUSTAINABLE DEVELOPMENT (SELECTION OF SUCCESSFUL COLLABORATION PROJECTS) (ESPINET, ED., 2014)

THE FINAL EVALUATION OF CODES BY THE EACEA

THE EACEA (EDUCATION, AUDIOVISUAL AND CULTURE EXECUTIVE AGENCY OF EU) RANKED THE CODES PROJECT AS EXCELLENT. SOME OF THE CHALLENGES AND HIGHLIGHTS OF CODES ARE MENTIONED

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- WAGNER-LUPTACIK, P., SMITH H., (2014). DIGITAL HANDBOOK FOR LOCAL AUTHORITIES FOR SCHOOL COMMUNITY COLLABORATION. ENSI. ISBN: 978-3-85031-194-6

POTENTIAL TO ENHANCE INNOVATIVE DEVELOPMENTS IN EDUCATION. IN AUSTRIA, ONE OF THE MAIN REASONS FOR THE CREATION OF THE ECOLOG SCHOOL NETWORK THAT AIMS AT ECOLOGISING SCHOOLS IS THE CREATION OF THE ECOLOG SCHOOL NETWORK THAT AIMS AT ECOLOGISING SCHOOLS AND ESTABLISHING A SUSTAINABLE SCHOOL CULTURE. ECOLOG WAS SET UP AS A NETWORK, MAINLY TO DISSEMINATE INNOVATION AND BEST PRACTICE, BUT ALSO TO FILL A STRUCTURAL GAP IN THE AUSTRIAN EDUCATIONAL SYSTEM.

THEORETICAL CONCEPTS OF NETWORKS IN EDUCATION

ACCORDING TO CASTELLS (2000), NETWORKS CONSTITUTE A NEW SOCIAL MORPHOLOGY OF SOCIETY, WHERE DOMINANT FUNCTIONS AND PROCESSES ARE INCREASINGLY ORGANISED THROUGH NETWORKS. THESE NETWORKS ARE ENHANCED THROUGH NEW INFORMATION TECHNOLOGIES THAT PROVIDE THE MATERIAL BASIS FOR THEIR EXPANSION THROUGHOUT THE ENTIRE SOCIAL STRUCTURE. CASTELLS (2000) CONCEPTUALISES HIS NOTION OF 'NETWORK' AS A HIGHLY DECENTRALISED OPEN SYSTEM CONSISTING OF NODES AND FLOWS.

IN THE WAKE OF THESE GENERAL SOCIETAL TRENDS AND STRUCTURAL TRANSFORMATIONS, NETWORKS HAVE ALSO BECOME INCREASINGLY ATTRACTIVE IN EDUCATIONAL SYSTEMS. IN THE FRAMEWORK OF SYSTEMIC SCHOOL MODERNISATION PROCESSES WERE LAUNCHED BY POLICYMAKERS, PROMOTED BY THE NEED FOR REFORMATORY CHANGE IN THE LIGHT OF THE RESULTS OF INTERNATIONAL ASSESSMENTS SUCH AS THE TIMSS AND PISA STUDIES. SINCE PROCLAIMING "SCHOOL AUTONOMY" AS KEY GOAL THE CENTRAL ADMINISTRATION IN AUSTRIA HAS FOCUSED MORE AND MORE ON CONTEXTUAL ACTIVITIES WHILST DELEGATING RESPONSIBILITIES TO DECENTRALISED INSTITUTIONS (POSCH AND ALTRICHTER, 1993; FULLAN, 2007; RAUCH AND SCHERZ, 2009). LESS BUREAUCRATIC STEERING GENERATES A NEED FOR ALTERNATIVE WAYS OF COORDINATION (ALTRICHTER, RIESS, 2010), AND INTERMEDIATE STRUCTURES (CZERWANSKI ET AL., 2002) SUCH AS NETWORKS ARE EXPECTED TO FILL A STRUCTURAL GAP AND TAKE OVER FUNCTIONS TRADITIONALLY ASSIGNED TO THE HIERARCHY. IDEALLY, NETWORKS ARE CONCEIVED AS AN INTERFACE AND EFFECTIVE MEANS OF POOLING COMPETENCIES AND RESOURCES (POSCH, 1995; OECD, 2003). AS INTERMEDIATE STRUCTURES, THEY MANAGE AUTONOMY AND INTERDEPENDENT STRUCTURES AND PROCESSES AND TRY TO EXPLORE NEW PATHS IN LEARNING AND COOPERATION BETWEEN INDIVIDUAL INSTITUTIONS.

PER DALIN'S (1999) DESCRIPTION OF HOW NETWORKS FUNCTION IN EDUCATION IS AN IMPORTANT THEORETICAL BASIS UNDERLYING THE FORMATION OF THE ECOLOG NETWORK. ACCORDING TO DALIN NETWORKS HAVE FOUR FUNCTIONS. FIRSTLY THEY HAVE AN INFORMATIVE FUNCTION WHICH BECOMES VISIBLE IN THE DIRECT EXCHANGE OF PRACTICE AND KNOWLEDGE FOR TEACHERS AND SCHOOLS, AND THROUGH THE NETWORK ACTING AS A BRIDGE BETWEEN PRACTICE AND KNOWLEDGE. A SECOND FUNCTION IS TO ENHANCE PROFESSIONALISM. THROUGH NETWORKS OPPORTUNITIES FOR FURTHER LEARNING AND COMPETENCE DEVELOPMENT ARE ENCOURAGED.

OF APPROXIMATELY 6,000 SCHOOLS IN AUSTRIA) WITH ABOUT 90,000 STUDENTS CURRENTLY ENGAGED IN THE NETWORK. SIX UNIVERSITY COLLEGES OF TEACHER EDUCATION PARTICIPATE AND MANY OTHERS ARE REACHED BY THE WEBSITE, TEACHER IN-SERVICE-TRAINING SEMINARS AND NEWSLETTERS.

ECOLOG IS BASED UPON AN ENSI APPROACH (ENSI, 2014): THE MUTUAL INTENTION AND GOAL OF NETWORK MEMBERS AND ESD-SCHOOLS IS TO ANALYSE THE ECOLOGICAL, TECHNICAL AND SOCIAL CONDITIONS OF THEIR ENVIRONMENT AND, ON THE BASIS OF THESE RESULTS AND OBJECTIVES, TARGETS, CONCRETE ACTIVITIES AND QUALITY CRITERIA, TO BE IMPLEMENTED AND EVALUATED. ANOTHER OBJECTIVE IS COOPERATION BETWEEN SCHOOLS, RESEARCHERS, POLICYMAKERS IN EDUCATION AS WELL AS INSTRUCTIONAL MANAGEMENT. STUDENTS AS WELL AS ALL THE OTHER ACTORS WITHIN SCHOOLS SHOULD BE INVOLVED IN A PARTICIPATORY WAY AND COLLABORATION WITH AUTHORITIES, BUSINESSES AND OTHER INTERESTED PARTIES IS ENCOURAGED. CONCERN THAT THE NETWORK FOCUSES ON INCLUDE AMONG OTHERS SAVING RESOURCES (E.G. ENERGY, WATER), THE REDUCTION OF EMISSIONS (EG WASTE, TRAFFIC), SPATIAL MANAGEMENT (FROM THE CLASSROOM TO THE CAMPUS), THE CULTURE OF LEARNING (COMMUNICATION AND ORGANISATIONAL STRUCTURE) HEALTH PROMOTION AND OPENING THE SCHOOL TO THE COMMUNITY.

ONE AREA OF WORK FOCUSES ON THE REORIENTATION OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING IN SUPPORT OF SUSTAINABLE DEVELOPMENT AND THE TRANSITION TO A GREEN ECONOMY. SINCE 1992 A WHOLE RANGE OF TRAINING ON ENVIRONMENTAL, HEALTH AND SAFETY ASPECTS HAVE BEEN OFFERED IN AUSTRIAN VOCATIONAL EDUCATION AND TRAINING SYSTEMS. CURRICULA HAVE BEEN DEVELOPED AS A RESULT.

How are ECO-Schools supported and what are the incentives?

IN ORDER TO PROVIDE SUPPORT, BMBWF ORGANISES NETWORK SUPPORT STRUCTURES. THE NETWORKS MENTIONED BELOW MEET TWICE A YEAR CENTRALLY AND ALSO FUNCTION IN THEIR REGIONS. MOST OF THE PEOPLE INVOLVED KNOW EACH OTHER AND COLLABORATE IN DIFFERENT PROJECTS AS WELL AS THE NETWORK.

- THE ECOLOG REGIONAL TEAMS COORDINATE THE NETWORK IN THEIR REGIONS.
- THE ENSI-TEACHER TEAM ADVISES THE MINISTRY AS WELL AS THE ECOLOG REGIONAL TEAMS REGARDING THE FURTHER DEVELOPMENT OF THE NETWORK.
- THE SCIENTIFIC ADVISORY BOARD HAS AN ADVISORY ROLE FOR THE MINISTRY AND FOR THE CENTRAL COORDINATION OF THE NETWORK.

1 THE AIMS AND PRINCIPLES OF ENSI ARE DESCRIBED UNDER THE FOLLOWING LINK: [HTTP://WWW.ENSI.ORG/MEDIA-GLOBAL/DOWNLOADS/PUBLICATIONS/197/THEROLEOFENSINAGLOBALEN_1_.PDF](http://www.ensi.org/media-global/downloads/publications/197/theroleofensinaglobalen_1_.pdf) (PAGE 4, PRINCIPLES AND PROCEDURE).

NETWORK. IT PROVIDES ENCOURAGEMENT FOR THE QUALITY DEVELOPMENT OF SCHOOL INNOVATION IN TEACHER TRAINING AND THEREFORE OPERATES BETWEEN THE *informative political function*.

THE ADVANTAGES FOR SCHOOLS PARTICIPATING IN THE ECOLOG NETWORK ARE FOLLOWS: SCHOOLS RECEIVE A STARTER KIT WHICH INCLUDES INFORMATION ABOUT SUSTAINABLE DEVELOPMENT AND SUGGESTIONS FOR CONCRETE MEASURES AND PROJECTS AS WELL AS ACCESS TO FREELY AVAILABLE PUBLICATIONS. SCHOOLS MAY ALSO APPLY UP TO EUROPE FOR A PROJECT THAT DEALS WITH ENVIRONMENT AND SUSTAINABILITY FROM THE EUROPEAN SUPPORT FUND FOR HEALTH EDUCATION AND EDUCATION FOR SUSTAINABLE DEVELOPMENT. TO MAKE THE SCHOOLS' ACHIEVEMENTS VISIBLE, ANNUAL SCHOOL REPORTS ARE PUBLISHED ON THE ECOLOG WEBSITE. ANOTHER BENEFIT IS THAT ECOLOG SCHOOLS HAVE A GOOD PEDAGOGICAL AND ORGANISATIONAL BASIS ON WHICH TO WORK TOWARDS THE ECO-LABEL FOR SCHOOLS AND UNIVERSITY COLLEGES FOR TEACHER EDUCATION. FINALLY THE ECOLOG PROGRAMME ALSO PROVIDES A GOOD FOUNDATION FOR SCHOOL QUALITY MANAGEMENT INITIATIVES AS IT USES A COMMON STRUCTURE FOR PLANNING AND REPORTING.

Evaluation of the ECOLOG Programme

THROUGHOUT THE 19 YEARS OF THE ECOLOG PROGRAMME, A SERIES OF EVALUATION STUDIES HAVE BEEN WRITTEN: THONHAUSER ET AL. (1998), EHGARTNER (1999), RAUCH AND SCHRITTESSER (2003) AND RAUCH AND DULLE (2011). THESE EVALUATIONS ARE BASED ON A MIXTURE OF INTERVIEWS WITH TEACHERS, HEAD TEACHERS, AND FACILITATORS OF SCHOOLS AS WELL AS ON OBSERVATIONAL DATA AND AN ANALYSIS OF MATERIAL PRODUCED BY THE SCHOOLS. SPYER ET AL. (2000), SCHOBER-SCHLATTER (2002) AND KNOLL AND SZALAI (2009) USED QUESTIONNAIRES AND HEINRICH AND MAYR (2005) DID A CROSS-CASE-ANALYSIS OF THE REPORTS FROM THE REGIONAL NETWORKS. THESE EVALUATIONS HIGHLIGHTED A NUMBER OF FACTORS THAT HAVE BEEN CRITICAL TO THE SUCCESS OF THE NETWORK.

COMMUNICATION HAS PROVED TO BE THE CENTRAL ELEMENT ALLOWING SCHOOLS TO REACH A COMMON UNDERSTANDING OF ESD. COMMUNICATION IS A KEY PRECONDITION FOR LEARNING FOR ALL MEMBERS OF THE SCHOOL COMMUNITY (I.E. THONHAUSER ET AL., 1998; EHGARTNER

AND HEAD TEACHERS PLAY AN IMPORTANT ROLE THROUGH THEIR "OFFICIAL" SUPPORT OF THE NETWORK SHOWN THROUGH ACTIONS SUCH AS PUTTING SUSTAINABILITY ON THE AGENDA OF TEACHER CONFERENCES AND BY REPEATED STATEMENTS OF SUPPORT IN THE PUBLIC ARENA. IN ADDITION, HEADS ENHANCE MOTIVATION BY RECOGNIZING SMALL STEPS WITH PHOTOS OR AN INFORMATION WALL BY MAINTAINING CONTACTS OUTSIDE THE SCHOOL THROUGH PUBLIC RELATIONS AND THE MEDIA AND BY PROVIDING INCENTIVES, THROUGH FOR EXAMPLE, NEGOTIATING FINAN

TEAMWORK TO ENABLE THE DEVELOPMENT OF A SUSTAINABLE SCHOOL CULTURE. THE CHALLENGE FOR SCHOOLS (RAUCH AND DULLE, 2011).

ECOLOG SCHOOLS ARE COMMITTED TO QUALITY DEVELOPMENT AND ASSURANCE. THE PUBLICATION OF ANNUAL REPORTS ALONG THE LINES OF A SCHOOL DEVELOPMENT PLAN CAUSED DIFFICULTIES IN THE BEGINNING. AFTER 10 YEARS, SCHOOLS HAVE WRITTEN THESE REPORTS WITH GREATER EASE AND THE ECOLOG ANNUAL REPORT IS SEEN AS A HELPFUL TOOL FOR REFLECTION AND PLANNING. ECOLOG SUPPORTS QUALITY DEVELOPMENT THROUGH THE DEFINITION OF VISIONS AND AIMS SUCH AS THE SHAPING A LIVEABLE WORLD AND THE PERCEPTION OF NATURE AS A WHOLE. FURTHERMORE, ECOLOG OFFERS A BROAD RANGE OF EVALUATION AND RESEARCH METHODS AND AS A RESULT CONTRIBUTES TO THE IMPLEMENTATION OF LEGAL PROVISIONS FOR THE QUALITY MANAGEMENT OF EDUCATIONAL STANDARDS (ESPECIALLY IN SCIENCE) (RAUCH AND DULLE, 2011).

RESUME AND OUTLOOK

THE EXAMPLE OF THE ECOLOG SCHOOL NETWORK SHOWS THAT THE THEORETICAL CONCEPTS OF NETWORKS, INCLUDING THE SEVEN ASPECTS FROM LITERATURE AND THE FOUR FUNCTIONS OF NETWORKS ACCORDING TO DALIN (1999) SERVE AS A GOOD BASIS FOR THE ESTABLISHMENT OF A NATIONAL ESD NETWORK IN EDUCATION.

THE ECOLOG NETWORK CARRIES OUT CREATIVE PROJECTS AND THROUGH THESE TRIES TO INCREASE THE ATTRACTIVENESS OF ESD. BASED ON THE EXAMPLE OF ECOLOG THE FOLLOWING POINTS CAN BE MADE ABOUT NETWORKS IN GENERAL.

- NETWORKS IN EDUCATION OFFER GOAL-ORIENTED EXCHANGE PROCESSES AMONG TEACHERS (INFORMATION FUNCTION) WHICH SUPPORT THE PROFESSIONAL DEVELOPMENT OF TEACHERS THROUGH PROVIDING FRESH IDEAS FOR CLASSROOM TEACHING AND ENCOURAGING INTERDISCIPLINARY COOPERATION IN SCHOOLS FOR EXAMPLE (LEARNING FUNCTION).
- NETWORKS HAVE THE POTENTIAL TO CREATE A CULTURE OF TRUST, WITH THE EFFECT OF RAISING SELF-ESTEEM OF, AND RISK-TAKING BY, TEACHERS (PSYCHOLOGICAL FUNCTION) IN PARTICULAR OF UPGRADING SCIENCE AT SCHOOL (POLITICAL FUNCTION).
- GOOD PRACTICE CANNOT BE CLONED, BUT EXCHANGING EXPERIENCE ON A PERSONAL LEVEL PROMOTES LEARNING AND INNOVATION.
- IT IS NECESSARY TO MAINTAIN A BALANCE OF ACTION AND REFLECTION (GOAL-ORIENTED PLANNING AND EVALUATION) AND AUTONOMY AND NETWORKING (ANALYSIS OF ONE'S OWN SITUATION). CRITICAL FRIENDS ARE ALSO USEFUL WHEN SETTING UP A SUSTAINABLE SUPPORT SYSTEM FOR SCHOOLS.

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AGREED THAT EFFECTIVE LEARNING IN SOCIETY NEEDS TO INCLUDE VARIOUS FORMS OF DIVERSITY (ACROSS DIFFERENT CULTURES, CONTEXTS (FORMAL, NON-FORMAL AND INFORMAL), DISCIPLINES (ACROSS DIFFERENT DISCIPLINARITY), METHODS (QUALITATIVE AND QUANTITATIVE) AND SUBJECTS (RESEARCHERS, TEACHERS, STUDENTS, DECISION-MAKERS, CITIZENS) (WALS ET AL., 2013; GLASS ET AL., 2013). ONE WAY OF ACHIEVING THIS INTEGRATION OF DIVERSITY IS THROUGH COOPERATION BETWEEN DIFFERENT SUBJECTS AND OVERCOMING THE OBSOLETE DISTINCTION OF FORMAL AND INFORMAL EDUCATION (WALS ET AL., 2013).

IT IS ALSO SUGGESTED THAT THERE IS AN URGENT NEED TO PROMOTE NETWORKING AT DIFFERENT GEOGRAPHIC LEVELS (LOCAL, REGIONAL AND/OR GLOBAL) (WALS, 2009) AND THE ESTABLISHMENT OF COMMUNITIES OF PRACTICE ON ESD MADE UP OF DIFFERENT STAKEHOLDERS (RESEARCHERS, TEACHERS, CITIZENS, ETC.) (TREZ ET AL., 2011). COMMUNITIES OF PRACTICE AS GROUPS OF PEOPLE WHO SHARE A CONCERN OR A PASSION FOR SOMETHING THEY DO AND LEARN HOW TO DO IT BETTER AS THEY INTERACT REGULARLY” (WENGER, 2011), COULD BE SEEN AS A PROMISING WAY FOR PROMOTING ESD TEACHING AND LEARNING STRATEGIES. SUCH COMMUNITIES ALLOW FOR INTERACTION BETWEEN THEIR MEMBERS IN A VARIETY OF FORMATS AND ENCOURAGE THE CO-CONSTRUCTION OF KNOWLEDGE (WENGER ET AL., 2002; HILDRETH AND KIMBLE, 2009). THROUGH THIS HYBRIDITY AND SYNERGY THE DEVELOPMENT OF NEW OPPORTUNITIES FOR ESD CAN ENABLE TRANSFORMATIVE LEARNING TAKE PLACE.

THE INTERNATIONAL IMPLEMENTATION SCHEME OF THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (DESD) RECOGNISES THE IMPORTANCE AND ENCOURAGES THE DEVELOPMENT OF NETWORKS AND COMMUNITIES OF PRACTICE (2005-2014) (UNESCO, 2005). FOR EXAMPLE SOME GOALS LISTED ARE TO:

- “GIVE AN ENHANCED PROFILE TO THE IMPORTANT ROLE OF EDUCATION AND LEARNING IN SUSTAINABLE DEVELOPMENT;
- FACILITATE NETWORKING, LINKAGES, EXCHANGE AND INTERACTION AMONG STAKEHOLDERS IN ESD;
- PROVIDE AN OPPORTUNITY FOR REFINING AND PROMOTING THE VISION OF AND TRANSITION TO SUSTAINABLE DEVELOPMENT – THROUGH ALL FORMS OF EDUCATION, PUBLIC AWARENESS AND TRAINING;
- FOSTER AN INCREASED QUALITY OF TEACHING AND LEARNING IN EDUCATION FOR SUSTAINABLE DEVELOPMENT”.

AN OVERVIEW OF SOME OF THE EXISTING NETWORKS IN ESD DISCOVERED A MULTIFACETED SITUATION IN RELATION TO THE STRUCTURE AND ORGANISATION OF NETWORKS IN DIFFERENT COUNTRIES. THESE RANGED FROM THE LOCAL MANCHESTER ENVIRONMENTAL EDUCATION NETWORK

DISCUSSION AMONGST DIFFERENT ACTORS INVOLVED IN ENVIRONMENTAL EDUCATION FOR SUSTAINABLE DEVELOPMENT INCLUDING UNIVERSITIES, INSTITUTES AND RESEARCH CENTRES, PUBLIC INSTITUTIONS, NON-GOVERNMENTAL ORGANISATIONS, SCHOOLS, PARKS, PROFESSIONAL ASSOCIATIONS, MASS MEDIA AND COMPANIES.

TAKING INTO ACCOUNT THIS INTERNATIONAL SCENARIO, SOME SPECIFIC TRAITS OF A NATIONAL MODEL ON ESD IN A NATIONAL CONTEXT ARE DISCUSSED WITH A FOCUS ON THE ITALIAN EXPERIENCE.

IN THE MID 1990'S THE NATIONAL ENVIRONMENTAL INFORMATION, TRAINING AND EDUCATION SYSTEM (INFEA) WAS ESTABLISHED IN ITALY TO COORDINATE THE PLANNING AND DELIVERY OF ESD. INFEA IS BASED AT THE MINISTRY OF THE ENVIRONMENT WITH THE COOPERATION OF REGIONAL OFFICES WHICH DISSEMINATE INFORMATION AND PROVIDE TRAINING AND EDUCATION IN THE FIELD OF SUSTAINABILITY. THIS SYSTEM WAS VERY ACTIVE FOR THE FIRST 6 YEARS AND FOCUSED MAINLY ON FORMAL EDUCATION (PRIMARY AND SECONDARY SCHOOLS) AND ON TRAINING OF TEACHERS AND ENVIRONMENTAL EDUCATORS. OVER THE LAST 5 YEARS HOWEVER, IT HAS RUN OUT OF STEAM LARGELY BECAUSE OF A COMPLETE HALT IN FUNDING DUE TO THE LACK OF POLITICAL INTEREST. ONLY A FEW REGIONS HAVE CONTINUED TO SUPPORT INITIATIVES. HOWEVER, DESPITE THIS SITUATION, A MULTITUDE OF ESD EXPERIENCES HAVE BEEN DEVELOPED IN THE SCHOOL AND EXTRA-SCHOOL CONTEXTS.

A FURTHER IMPORTANT WEAKNESS IN THE ITALIAN CONTEXT IS A LACK OF TRANSVERSALITY. TRANSVERSALITY IS A CENTRAL CONCEPT IN THE UNESCO AND UNECE VISIONS (UNESCO, 2005; UNECE, 2005) WHERE THE CROSSING AND THE BLURRING OF BOUNDARIES HAVE BEEN IDENTIFIED AS STRATEGIC GOALS FOR ACTORS INVOLVED IN ESD ALLOWING THE DEVELOPMENT OF NEW APPROACHES OF UNDERSTANDING AND KNOWLEDGE. THIS IS A CHALLENGE IN ITALIAN SOCIETY WHICH IS CHARACTERISED BY A STRONG TRADITION OF DISCIPLINARY RESEARCH IN DIFFERENT FIELDS. THIS IS ADDITIONALLY LINKED TO THE LACK OF INSTITUTIONAL SUPPORT FOR ESD AND OF A SPECIFIC POLITICAL DIRECTION. DUE TO THE DEEP CRISIS OF THE ROLE OF THE SCHOOL IN ITALIAN SOCIETY AND THE CRITICAL SOCIO-ECONOMIC SITUATION, THERE IS AN OBVIOUS AND URGENT NEED FOR NEW IDEAS AND APPROACHES IN ALL AREAS. IN TURN THIS HIGHLIGHTS THE NEED FOR MORE ENERGETIC AND INCISIVE RESEARCH IN THIS FIELD.

STARTING FROM THESE REFLECTIONS A GROUP OF ITALIAN ESD PRACTITIONERS DECIDED TO TURN THESE WEAKNESSES INTO OPPORTUNITIES THROUGH THE CONCEPT OF NETWORKING. NETWORKING SEEMED A GOOD WAY TO PROMOTE COMMON AND INTEGRATED ACTION IN A WAY THAT MIGHT CATALYSE THE ATTENTION OF POLITICIANS AND INSTITUTIONS TOWARDS ESD. SO IN 2013, ARISING FROM THESE NEEDS AND FROM THE INTERNATIONAL MOVEMENTS DESCRIBED ABOVE, THE FOUNDATION OF AN ITALIAN NETWORK FOR ESD LINKED TO WEEC (WEEC - ITALIA), BEGAN TO TAKE SHAPE.

THE STARTING POINT FOR IDENTIFYING AND CLARIFYING THE MISSION OF THE WEEC-ITALIA NETWORK;

- IDENTIFY SOME KEY PRINCIPLES AROUND WHICH TO ELABORATE A COMMON “FOUNDATIONAL DOCUMENT” FOR THE NETWORK;
- DISCUSS AN EFFICIENT WAY TO ORGANISE THE NETWORK GIVING FORM TO THE FIRST MEETING

DISCUSSION

EVEN IF THE FORMAL ESTABLISHMENT OF THE NETWORK IS NOT YET COMPLETE AND ITS WORK IS STILL AT AN EARLY STAGE, SOME RESULTS CAN BE ANALYSED.

TO BEGIN WITH, MORE THAN 150 PEOPLE FROM DIFFERENT CULTURAL AND PROFESSIONAL GROUNDS ATTENDED THE VARIOUS MEETINGS AND DEMONSTRATED THEIR INTEREST IN BEING PART OF THE NETWORK. NOT ONLY THIS, BUT THE EXPANDED HORIZON FROM ENVIRONMENTAL SUSTAINABILITY AND SO FROM ENVIRONMENTAL EDUCATION TO EDUCATION FOR SUSTAINABLE DEVELOPMENT HAS MADE IT POSSIBLE TO BRING NEW ACTORS INTO THE COMMUNITY, COMING FROM DIFFERENT FIELDS NOT INVOLVED BEFORE. THE EFFECTS OF THIS GROWTH IN THE RICHNESS AND COMPLEXITY OF THE STAKEHOLDERS IS A SIGNIFICANT ONE FOR RESEARCH ON ESD BOTH FROM A METHODOLOGICAL AND A THEMATIC PERSPECTIVE.

THERE IS ALSO A WIDE DIVERSITY OF GROUPS INVOLVED IN THE WEEC-ITALIA NETWORK INCLUDING PUBLIC INSTITUTIONS (SCHOOLS AND UNIVERSITIES), LOCAL ADMINISTRATIONS (REGIONS, MUNICIPALITIES), NON-GOVERNMENTAL ORGANISATIONS, COMPANIES, EDUCATIONAL AND RESEARCH CENTRES, FARMS, SOLIDARITY PURCHASING GROUPS, GREEN ECONOMISTS AND INDIVIDUAL PRACTITIONERS. THE PARTICIPATION OF SUCH A WIDE RANGE OF STAKEHOLDERS ENHANCES THE POSSIBILITY OF THE INTEGRATION OF IDEAS, APPROACHES, METHODS AND TARGETS FROM DIFFERENT DISCIPLINES. THIS WILL POTENTIALLY RESULT IN A GREATER DEGREE OF INTERDISCIPLINARITY AND EMPHASIS ON A LIFE-LONG LEARNING APPROACH TO ESD INVOLVING SOCIAL AND POLITICAL DIMENSIONS. THIS WAY, HYBRIDISED ENVIRONMENTS AND NEW SPACES FOR ESD RESEARCH COULD EMERGE EMBRACING THE IMPORTANCE OF MULTIPLE VOICES, CULTURAL AND THEORETICAL PERSPECTIVES AND MORE ACTIVE COMMUNITY-BASED APPROACHES.

ANOTHER IMPORTANT CHARACTERISTIC OF WEEC-ITALIA IS ITS BOTTOM-UP APPROACH. OTHER ITALIAN NETWORKS ON ESD DEVELOPED IN THE PAST, INCLUDING THE INFEA SYSTEM, AND NETWORKS FROM OTHER COUNTRIES SUCH AS THE AUSTRALIAN GOVERNMENT-NATIONAL EDUCATION FOR SUSTAINABILITY NETWORK, WERE PROMOTED AND SUPPORTED BY PUBLIC INSTITUTIONS. WEEC-ITALIA IS THE OPPOSITE. IT IS A SELF-ASSEMBLED NETWORK, DEVELOPED FROM THE NEEDS AND COMMITMENTS OF ITS MEMBERS. THIS CHARACTERISTIC OF THE NETWORK COULD BE CONSIDERED A STRENGTH AND A POTENTIAL WEAKNESS.

STAKEHOLDERS SHARED THE IDEA THAT AN EFFICIENT WAY OF WORKING REQUIRED THE IDENTIFICATION OF PRIORITY THEMES AND ISSUES TO DISCUSS, TOGETHER WITH THE FORMATION OF WORKING GROUPS TO CONSIDER THESE. AS A RESULT, THE FOLLOWING GROUPS HAVE BEEN SET UP (VV.AA., 2014):

- FORMAL EDUCATION; WITH FOCUS ON ALL TYPES AND LEVELS OF SCHOOLS AND UNIVERSITIES, ESPECIALLY LOOKING AT THE STRENGTHS AND WEAKNESSES OF THEIR INVOLVEMENT;
- INFORMAL EDUCATION; HAS THE AIM OF CONSIDERING THE MULTIPLICITY OF LANGUAGES AND COMMUNICATION TOOLS USEFUL FOR A COMMON STRATEGY ON ESD;
- PARTICIPATIVE APPROACHES; HAS THE AIM OF WORKING ON THE DEVELOPMENT OF PARTICIPATIVE AND BOTTOM UP STRATEGIES TO PREVENT CONFLICTS AND TO SUPPORT SUSTAINABLE MANAGEMENT;
- PROFESSIONAL COMPETENCES; AIMS TO DEAL WITH THE LACK OF TRAINING AND PROFESSIONAL ACKNOWLEDGMENT OF PEOPLE INVOLVED IN ESD AT A NATIONAL LEVEL;
- PUBLIC ADMINISTRATIONS; HAS A FOCUS ON THE PROMOTION OF ESD WITHIN THE PUBLIC ADMINISTRATION, REINFORCING THE POLITICS FOR SUSTAINABILITY AND THEIR EFFORTS TOWARDS THE MANAGEMENT OF A NATIONAL SYSTEM FOR ESD (SUCH AS INFEA SYSTEMS FOR INSTANCE);
- UNIVERSITY AND SUSTAINABILITY; APPROACHED THE ROLE OF HIGHER EDUCATION INSTITUTIONS SUPPORTED A DEBATE IN THE ACADEMIC WORLD, BOTH AS A RESEARCH AND EDUCATION INSTITUTION AND A FUNDAMENTAL PART OF CIVIL SOCIETY, FROM AN ESD PERSPECTIVE.

CONCLUSION

DESPITE THE FACT THAT THE WEEC-ITALIA NETWORK AND WORKING GROUPS ARE ONLY AT THE START OF THEIR WORK, THEY HAVE ALREADY MANAGED TO DRAW ATTENTION TO ESD, OFFER SUPPORT TO PRACTITIONERS AND PROMOTED NEW RESEARCH WITHIN THE ITALIAN NATIONAL CONTEXT. AS A RESULT OF THE WEBSITE AND OTHER INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS), OTHERS INTERESTED IN THE NETWORK HAVE BEGUN TO SHARE EXPERIENCES AND DISCUSS AND DEVELOP PARTNERSHIPS. RESEARCH PROJECTS HAVE ALSO BEEN PROMOTED. FOR EXAMPLE THE “UNIVERSITY AND SUSTAINABILITY” GROUP IS UNDERTAKING A SURVEY AMONG UNIVERSITY TEACHERS AND STUDENTS TO IDENTIFY THEIR IDEAS, PRACTICES AND NEEDS RELATED TO ESD IN THE CONTEXT OF HIGHER EDUCATION. ALL THE ACTIVITIES UNDERTAKEN SO FAR BY THE NETWORK (SPECIFIC ACTIVITIES, RESEARCH AND OTHER INITIATIVES), SHOULD BE CONSIDERED AS CATALYSTS FOR A VIRTUOUS PROCESS THAT CONTRIBUTES TO REINFORCING THE VISIBILITY AND ROLE OF THE NETWORK IN AFFECTING RESEARCH, POLICIES AND PRACTICES ON ESD IN THE ITALIAN CONTEXT. IN SPITE OF THESE POSITIVE SIGNS, SOME CRITICAL ASPECTS NEED TO BE HIGHLY MONITORED: (A) THE SLOW DEVELOPMENT OF THE NETWORK FORMALISATION. THIS IS RELATED TO THE CHALLENGES OF MANAGING A VOLUNTARY NETWORK THAT HAS LITTLE FINANCIAL SUPPORT; (B) THE NAME “WEEC – ITALIA”. THIS WAS GIVEN TO THE NETWORK THROUGH A PARTICIPATIVE

DISCIPLINES, CULTURES, INSTITUTIONS AND SECTORS. WITH THIS IN MIND THE WEEC NETWORK WILL GO ON, WITH THE AWARENESS THAT THERE IS NOT A DEFINED COURSE, A ROAD TO GO ALONG, BECAUSE "...A PATH IS MADE BY WALKING" (POEM BY ANTONIO MACHADO).

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SCHOOLING FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT: THE CONTRIBUTION OF REGIONAL CENTRES OF EXPERTISE

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AbSTRACT

TEN YEARS AFTER THE LAUNCH OF REGIONAL CENTRES OF EXPERTISE (RCES) ON EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD), THERE IS EVIDENCE CONFIRMING THAT MUCH HAS BEEN ACHIEVED AND ACCOMPLISHED BY THESE MULTI-STAKEHOLDER NETWORKS, COMMITTED TO BUILDING MORE SUSTAINABLE COMMUNITIES THROUGH LEARNING AND ACTION. IN ASIA-PACIFIC, RCES HAVE CONTRIBUTED TO ADVANCING UNDERSTANDING OF THE CONNECTIONS BETWEEN ESD AND SUSTAINABILITY CHALLENGES SUCH AS CLIMATE CHANGE, HEALTH, BIODIVERSITY & TRADITIONAL KNOWLEDGE AND DISASTER RISK REDUCTION. THIS HAS BEEN ACCOMPLISHED THROUGH HANDS-ON PROJECTS, RESEARCH AND ENGAGEMENT OPPORTUNITIES IN ALL LEARNING AND EDUCATION SPHERES. THIS CHAPTER REVIEWS PROJECTS AND EXPERIENCES LED BY RCES IN ASIA-PACIFIC THAT SPECIFICALLY SUPPORT THE PROCESS OF EMBEDDING SUSTAINABLE DEVELOPMENT PRINCIPLES IN TEACHER EDUCATION AND IN PRIMARY AND SECONDARY SCHOOLS. IT IDENTIFIES CURRENT TRENDS, ANALYSES TEACHING AND LEARNING APPROACHES AND ASSesses CONTRIBUTIONS OF RCES IN THE REGION IN BRINGING ABOUT INNOVATION FOR SUSTAINABLE DEVELOPMENT. THE CHAPTER CONCLUDES WITH A SERIES OF RECOMMENDATIONS TO ENHANCE THE IMPACT AND RELEVANCE OF RCES FOR EFFECTIVE IMPLEMENTATION OF THE GLOBAL ACTION PROGRAMME (GAP) ON ESD.

KEY WORDS

ASIA-PACIFIC; EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD); GLOBAL ACTION PROGRAMME (GAP); REGIONAL CENTRES OF EXPERTISE (RCES); SCHOOLS.

KEY ESD DOCUMENTATION AND FORMAL RCE EVALUATIONS HAVE CONSISTENTLY CONFIRMED THE ROLE OF RCES IN BRINGING ABOUT CHANGE FOR SUSTAINABILITY AND CONTRIBUTING TO ACHIEVING THE GOALS AND AMBITIONS OF THE DESD (SEE, FOR EXAMPLE, FADEEVA ET AL., 2014 AND UNESCO, 2014). THE CONTRIBUTIONS MADE BY RCES FOR THE PAST TWO DECADES WERE PRESENTED DURING BOTH THE 9TH GLOBAL RCE CONFERENCE (4-7 NOVEMBER 2014, OKAYAMA, JAPAN) AND THE UNESCO WORLD CONFERENCE ON ESD (10-12 NOVEMBER 2014, NAGOYA, JAPAN). NOTABLY, RCES HAVE PROVIDED PLATFORMS FOR THE DEVELOPMENT OF EDUCATORS' AND LEARNERS' COMPETENCES ON ESD; HAVE BUILT A SUSTAINABILITY CULTURE BASED ON COLLABORATION AND PARTNERSHIPS FOR CHANGE APPROACHES; HAVE RESPONDED TO REGIONAL AND LOCAL SYSTEMS IN CRISES; HAVE BROUGHT INNOVATION INTO TEACHING AND LEARNING SYSTEMS FOR GREENER AND MORE SOCIALLY JUST SOCIETIES; AND, HAVE INFLUENCED THE DEVELOPMENT AND IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT AND ESD POLICIES AND PROGRAMMES.

AT THE GLOBAL CONFERENCE ON ESD IN NOVEMBER 2014 IN JAPAN, THE RCE COMMUNITY HAS RENEWED COMMITMENTS TO SUPPORT RELEVANT INTERNATIONAL ESD FRAMEWORKS INCLUDING THE NEW GLOBAL ACTION PROGRAMME (GAP) ON ESD LED BY UNESCO AS A FOLLOW-UP INTERNATIONAL PLATFORM AFTER THE DESD. THE GAP ON ESD HAS PROVIDED NEW IMPETUS TO CONTINUE SUPPORTING THE ESD AGENDA AND UP-SCALING EFFORTS, BUT ALSO OPPORTUNITIES FOR ORGANISATIONS AND NETWORKS TO RE-THINK PRIORITIES AND STRATEGIC DIRECTIONS FOR THE NEXT FIVE YEARS (TABUCANON ET AL., 2014). THROUGH THE OKAYAMA DECLARATION (UNESCO, 2014B), RCES UNANIMOUSLY REAFFIRM THEIR COMMITMENT TO THE STRATEGIES WITHIN THE GAP PRIORITIES IN THE IMPLEMENTATION OF ACTIONS FOR ADVANCING POLICY, TRANSFORMING LEARNING AND TEACHING ENVIRONMENTS, BUILDING CAPACITIES OF EDUCATORS AND TRAINERS, MOBILISING YOUTH AND ACCELERATING SOLUTIONS AT THE LOCAL AND REGIONAL LEVELS TO CREATE MORE SUSTAINABLE COMMUNITIES.

THESE COMMITMENTS HAVE ALSO BEEN ADOPTED AT THE REGIONAL LEVEL. THE RCE ASIA-PACIFIC NETWORK, WHICH COMPRISES 49 MEMBERS, DEVELOPED AND APPROVED A STRATEGIC DOCUMENT WHICH IDENTIFIES PATHWAYS TO SUPPORT THE IMPLEMENTATION OF THE GAP ON ESD IN THE REGION (SEE UNU IAS, 2014C). BUILDING CAPACITIES OF EDUCATORS AND WORKING WITH THE SCHOOL SECTOR HAVE BEEN IDENTIFIED AS REGIONAL PRIORITIES IN ORDER TO IMPROVE ACCESS TO EDUCATION, ENHANCE QUALITY OF EDUCATION SYSTEMS AND RE-ORIENT TEACHING AND LEARNING AND PEDAGOGIES FOR SUSTAINABILITY.

THIS CHAPTER PROVIDES AN OVERALL PICTURE OF ASIA-PACIFIC RCE CONTRIBUTIONS IN ENGAGING AND SUPPORTING THE SCHOOL SECTOR IN BRINGING ABOUT INNOVATION FOR SUSTAINABLE DEVELOPMENT. IT REVIEWS PROJECTS AND EXPERIENCES LED BY RCES IN THE REGION.

ACKNOWLEDGING THE NEED TO BRING CONTEXTUAL RELEVANCE AND INNOVATION IN SCHOOL CURRICULUM, MANY RCEs ARE FOCUSED ON ENGAGING KEY STAKEHOLDERS IN PRIMARY AND SECONDARY SCHOOL EDUCATION TO RE-THINK TEACHING AND LEARNING; FACILITATING PROJECTS WHICH SUPPORT THE STUDENT LEARNING FOR SUSTAINABILITY; AND, PROVIDING TRAINING TO PRE-SERVICE AND IN-SERVICE TEACHERS.

A REVIEW OF ASIA-PACIFIC RCE PROJECTS AND EXPERIENCES IN THE SCHOOL SECTOR

THIS CHAPTER PRESENTS THE RESULTS OF A REVIEW OF SUSTAINABILITY PROJECTS CARRIED OUT DURING FEBRUARY 2015 AND EXPERIENCES ON TEACHER EDUCATION AND SCHOOLS FACILITATED AND LED BY RCEs IN THE ASIA-PACIFIC REGION DURING THE PERIOD 2010-15. THE PURPOSE OF THE REVIEW IS TO; DRAW AN OVERALL PICTURE OF RCE ACTIVITIES AND CONTRIBUTIONS TO THE DESD; IDENTIFY THE TEACHING & LEARNING STRATEGIES AND PEDAGOGICAL PRINCIPLES ALIGNED WITH ESD SUPPORTED BY RCE INITIATIVES; ANALYSE CHALLENGES AND OPPORTUNITIES IN SUPPORTING CHANGE FOR SUSTAINABILITY PROCESSES IN THE SCHOOL SECTOR; AND, IDENTIFY RECOMMENDATIONS WHICH CAN ASSIST RCEs TO ENHANCE THEIR RELEVANCE AND IMPACT TO THE SCHOOL SECTOR AND CONTRIBUTE MORE EFFECTIVELY TO THE GOALS OF THE DESD AND THE GAP.

A TOTAL OF 32 PROJECTS FROM 13 RCEs IN 9 COUNTRIES OF THE ASIA-PACIFIC REGION (INDONESIA, BANGLADESH, CAMBODIA, CHINA, INDIA, INDONESIA, JAPAN, MALAYSIA AND REPUBLIC OF KOREA) HAVE BEEN STUDIED IN THE PROCESS OF DRAWING UP THE REVIEW. FROM THESE PROJECTS, 12 WERE TARGETED TO THE WHOLE SCHOOL COMMUNITY (TEACHERS, STUDENTS, SCHOOL MANAGERS AND ADMINISTRATORS, PARENTS AND COMMUNITY); 10 TO SCHOOL TEACHERS AND STUDENTS, 5 TO SOLELY TEACHERS, AND 5 TO SOLELY STUDENTS.

THE CASE STUDIES HAVE BEEN SELECTED BY REVIEWING KEY RCE REPORTS AND ACTIVITIES, IDENTIFYING THOSE PROJECTS FOCUSED ON SCHOOL EDUCATION CARRIED OUT DURING THE PERIOD 2010-15. THE FOLLOWING MATERIALS WERE REVIEWED:

- ANNUAL REPORTS SUBMITTED BY RCEs THROUGH THE NETWORK'S WEB PORTAL DURING THE PERIOD 2010-14;
- PROJECTS NOMINATED FOR THE ANNUAL RCE AWARD (2013 AND 2014); AND,
- TEMPLATES DEVELOPED, CIRCULATED AND COMPLETED BY RCEs IN THE REGION DURING FEBRUARY 2015. THE AIM OF THE TEMPLATES WAS TO IDENTIFY PROJECTS WHICH WERE DOCUMENTED IN RCE RESOURCES. THE RESPONSE RATE FROM RCEs WAS LOW. THEREFORE, WHILE SOME ADDITIONAL PROJECTS WERE IDENTIFIED, IT WAS DIFFICULT TO REVIEW ALL THE ACTUAL RCE SCHOOL AND TEACHER EDUCATION INITIATIVES CARRIED OUT FROM 2010-15.

GLOBAL CITIZENSHIP; CONNECTING SUSTAINABLE DEVELOPMENT WITH CULTURAL HERITAGE DIVERSITY; AND, EXPLORING VALUES-BASED APPROACHES TO SUSTAINABILITY.

- **ESD quality and teaching and learning processes**

THE DIFFERENT PROJECTS REVIEWED HIGHLIGHT THE EFFORTS MADE IN EMBEDDING ESD WITHIN THE FORMAL CURRICULA. ALTHOUGH WHOLE INSTITUTIONAL APPROACHES ARE PRACTICED BY SOME RCES SUCH AS RCE GOA (INDIA), RCE OKAYAMA (JAPAN) AND RCE TONGYEONG (REPUBLIC OF KOREA), THE REALITY IS THAT MANY OF THESE EFFORTS ARE STILL PIECEMEAL APPROACHES OR SHORT TERM SUSTAINABILITY PROJECTS. IN ORDER TO FULLY IMPLEMENT ESD WITHIN THE EDUCATION SYSTEM THERE IS A NEED TO CHALLENGE EXISTING STRUCTURES AND SYSTEMS (MULÀ AND TILBURY, 2011). NONE OF THE PROJECTS REVIEWED REFLECT A COMPLEX PROCESS.

CHANGE TOWARDS SUSTAINABILITY IN SCHOOLS REQUIRES MORE THAN JUST RE-ORIENTING CURRICULA. IT IMPLIES DEEPER LEVELS OF COMMITMENT WHERE SCHOOLS ARE NOT ONLY CONCERNED ABOUT WHAT IS TAUGHT, BUT HOW STUDENT LEARNING OCCURS. ESD ULTIMATELY ENGAGE ALL MEMBERS OF THE SCHOOL COMMUNITY AT THE VERY CORE OF THE SCHOOL. THIS INCLUDES INFLUENCING CURRICULUM, OPERATIONS, MANAGEMENT PROCEDURES, PARTNERSHIP RELATIONSHIPS WITH THE LOCAL COMMUNITY.

THE FOCUS OF MOST INITIATIVES STUDIED IS ON THE REORIENTATION PROCESSES OF CURRICULA WITHIN EXISTING EDUCATIONAL SYSTEMS. LITTLE ATTENTION IS GIVEN TO LINKING FORMAL AND NON-FORMAL AND INFORMAL CURRICULA. AN EXCEPTION IS RCE PENANG (MALAYSIA) WHICH IS CURRENTLY FACILITATING A CO-CURRICULUM INITIATIVE FOCUSED ON CREATING A NETWORK OF SCHOOLS ENGAGED IN IMPLEMENTING SUSTAINABILITY CLUBS. THIS INITIATIVE IS FOCUSED ON PROVIDING CAPACITY BUILDING OPPORTUNITIES TO BOTH TEACHERS AND STUDENTS ENGAGED IN THE CLUBS AND LINKING THE SCHOOL FORMAL AND INFORMAL CURRICULUM EXPERIENCES.

THE REVIEW ALSO ATTESTS THAT RCES HAVE STILL TO ENGAGE IN REVIEWING THE QUALITY OF THE PROCESSES TAKING PLACE TO EMBED ESD IN TEACHER TRAINING AND SCHOOL INITIATIVES. RCES HIGHLIGHT PARTICIPATORY, ACTION AND CONTEXT-BASED LEARNING AS PEDAGOGICAL APPROACHES ADOPTED. PEDAGOGIES RELATED TO CULTURAL DIVERSITY AND INTERCULTURAL DIALOGUE ALSO APPEAR TO BE IMPORTANT FOR RCES IN THE REGION. HOWEVER, FEW EXAMPLES ARE GIVEN ABOUT HOW THESE PEDAGOGIES ARE USED OR DEVELOPED IN PRACTICE.

- **Culture of cooperation, quality and relevance**

THE CREATION OF PARTNERSHIPS, ESPECIALLY WITH GOVERNMENT AGENCIES AND NON-GOVERNMENT ORGANISATIONS, IS VIEWED AS A CRUCIAL COMPONENT IN MOST OF RCE PROJECTS ANALYSED. ALSO, SOME

LOOKING FORWARD

THE PROJECTS AND INITIATIVES ANALYSED AS PART OF THIS REVIEW REFLECT ON THE SUSTAINABILITY COMPLEXITY AND CHALLENGES THAT RCES ARE FACING IN SUPPORTING TEACHERS AND SCHOOLS. AT THE HEART OF ALL THE ESD INITIATIVES STUDIED ARE MULTI-STAGE PROCESSES AND PARTNERSHIPS FOR CHANGE, WHICH SEEK TO EMBED CHANGE WITHIN SCHOOL ACTIVITIES AND THE CURRICULUM EXPERIENCE. CHANGE FOR SUSTAINABILITY IS A LONG TERM PROCESS. WHILE THE PROJECTS AND INITIATIVES STUDIED HAVE STARTED TO ENGAGE SCHOOL TEACHERS AND STUDENTS IN RETHINKING TEACHING AND LEARNING, MORE EFFORTS ARE NEEDED TO TRANSFORM THE SCHOOL CULTURE. THE FOLLOWING RECOMMENDATIONS HAVE BEEN IDENTIFIED AS PART OF THIS REVIEW, WITH THE AIM OF INCREASING RCES' RELEVANCE AND IMPACT TO THE SCHOOL SECTOR AND CONTRIBUTING TO THE AMBITIONS SET OUT IN THE GAP ON

- **Supporting projects that promote whole-institutional approaches and institutional culture change for sustainability**

MOST INITIATIVES AND PROJECTS STUDIED HAVE FOCUSED ON RE-ORIENTING THE CURRICULUM TOWARDS SUSTAINABILITY THROUGH PROVIDING CAPACITY BUILDING FOR TEACHERS AND ENGAGING STUDENTS IN ACTION LEARNING ACTIVITIES. CHANGE TOWARD SUSTAINABILITY REQUIRES MORE THAN JUST RETHINKING EDUCATIONAL CURRICULA. THERE ARE SIGNIFICANT OPPORTUNITIES FOR SCHOOLS TO NOT ONLY RETHINK WHAT WE LEARN, BUT ALSO HOW WE LEARN. FOR SUCH SUCCESSFUL, TRANSFORMATION WILL REQUIRE THE INVOLVEMENT OF ALL THE SCHOOL COMMUNITY AND RETHINKING SCHOOL OPERATIONS, MANAGEMENT, COMMUNICATIONS AND RELATIONSHIPS WITH LOCAL PARTNERS.

- **Sharing and reviewing capacity building programmes and resources**

THIS STUDY HAS IDENTIFIED CRITICAL OPPORTUNITIES TO COLLABORATIVELY SHARE AND REUSE CAPACITY-BUILDING PROGRAMMES AND EDUCATIONAL MATERIALS DEVELOPED BY RCES. THE AIM IS TO ENSURE THAT THERE IS NO DUPLICATION OF EFFORTS AMONG RCES AND LOOK FOR RESOURCES AND PROGRAMMES THAT COULD BE TRANSFERRED AND ADAPTED TO DIFFERENT NATIONAL AND LOCAL CONTEXTS. DRAWING UPON POOLED RESOURCES, CAPACITIES AND EXPERTISE IS CRITICAL FOR RCES TO LEARN FROM EACH OTHER, INCREASE THE IMPACT OF PROJECTS AND IMPROVE THE QUALITY OF ESD PROCESSES.

- **Engaging with a wider diversity of thematic entry points to teach and learn for sustainable development**

MOST OF THE PROJECTS STUDIED ARE FOCUSED ON ENVIRONMENTAL THEMES SUCH AS CLIMATE CHANGE, BIODIVERSITY OR WATER MANAGEMENT. THIS STUDY HAS IDENTIFIED THE NEED FOR RCES TO ADDRESS A WIDER VARIETY OF THEMATIC ENTRY POINTS INTO SUSTAINABLE DEVELOPMENT, WHICH CAN PROVIDE A MORE COMPLETE UNDERSTANDING OF REGIONAL CHALLENGES

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INTRODUCTION: Tracing flax in Lesachtal

THE ONGOING PROJECT “LANDSCAPE AND YOU-TH. TRACING FLAX”, IS FUNDED BY THE AUSTRIAN FEDERAL MINISTRY OF SCIENCE AND RESEARCH, AND STARTED IN AUTUMN 2012 AS A RESEARCH COLLABORATION BETWEEN THE ALPEN-ADRIA-UNIVERSITY IN KLAGENFURT AND SCHOOLS OF THE MOST PERIPHERAL ALPINE VALLEYS OF THE REGION, THE LESACHTAL. THIS VALLEY, LOCATED IN THE SOUTHWEST OF CARINTHIA, AUSTRIA, BORDERS ITALY ALONG A WEST-EAST CHAIN OF MOUNTAINS, THE CARNIAN ALPS. WITH A DECLINING POPULATION OF 1,400 AND A BASIC AGRICULTURAL ECONOMY INCLUDING SOME TOURISM, IT DISPLAYS ALL THE PROBLEMS TYPICAL OF PERIPHERAL MOUNTAIN REGIONS. REGIONAL DEVELOPMENT STRATEGIES HAVE BEEN RE-FOCUSED IN THE LAST DECADES TOWARDS AN ECONOMY BASED ON SUSTAINABLE TOURISM FOCUSING ON LOCAL ECOLOGICAL AND CULTURAL RESOURCES SUCH AS THE CULTURAL LANDSCAPE OF THE VALLEY. THE FOCUS OF THIS RESEARCH IS ON THE RELATIONSHIP BETWEEN LOCAL KNOWLEDGE, LOCAL INTERGENERATIONAL DIALOGUE AND REGIONAL IDENTITY CONNECTED WITH THE CULTIVATION AND MANUFACTURING OF FLAX IN THE LESACHTAL (SEE FIGURE 1). FLAX (LINUM USITATISSIMUM) IS A FOOD AND FIBER CROP THAT WAS PLANTED IN LESACHTAL UNTIL THE 1960S TO PRODUCE FLAXSEED OIL AS WELL AS FIBRES FOR MAKING LINEN. WHEN COTTON AND SYNTHETIC FIBRES APPEARED ON THE MARKET, THE TIME-CONSUMING CULTIVATION OF FLAX BECAME LESS AND LESS PROFITABLE.



Photo 1: Harvesting Flax



Photo 2: processing Flax



Photo 3: interviewing the elderly about flax

METHODS

A participatory approach

THE PROJECT IS STRUCTURED AROUND CO-OPERATIVE RESEARCH, INCLUDING THE ACTION RESEARCH METHODS DEVELOPED BY KURT LEWIN AND JOHN DEWEY (WIDELY USED IN THE FIELD OF EDUCATION AND PEDAGOGY) (RAUCH, 2005), INTERVENTION RESEARCH (BAMMÉ, 2005; KRÄUTER AND LERCHSTER, 2012) AND THE ETHICS OF THE RESEARCH PROCESS. THE PROJECT DEVELOPED BY THE ASSUMPTION THAT CO-OPERATION IN THE RESEARCH PROCESS MUST BE BASED ON MUTUAL INTEREST, SHARED INFLUENCE IN DECISIONS CONCERNING QUESTIONS, METHODS AND PRODUCTS OF RESEARCH. THERE MUST ALSO BE A SHARED RESPONSIBILITY FOR THE OUTCOME OF THE PROJECT. RIGHT FROM THE START THE RESEARCH PROCESS WAS DEFINED BY A PARTNERSHIP OF LOCAL AND REGIONAL SCHOOLS WITH THE RESEARCH TEAMS. THE RESEARCH PROPOSED UP IN A CO-OPERATION WITH TEACHERS AND THE HEAD TEACHERS (ONE OF THE REQUIREMENTS FOR FUNDING) AND THE FIRST WORKSHOP WAS DESIGNED CO-OPERATIVELY. THE RESEARCH TEAM WAS RESPONSIBLE FOR PROJECT MANAGEMENT, BUT ALL THE ACTIVITIES IN THE RESEARCH WORKSHOPS, THE ORAL HISTORY INTERVIEWS, CULTIVATION AND PROCESSING OF FLAX, TEXTILE WORK AND THE MEDIA WORK WERE DONE WITH LOCAL AND REGIONAL PARTNERS. THE RESEARCH PARTNERS ALSO SUPPORTED THE PROJECT WITH ACCOMMODATION, TRANSPORT FACILITIES AND MOST OF ALL IN COMMUNICATING ABOUT THE PROJECT IN THE REGION. TWO LOCAL ASSOCIATIONS, THE “KULTURVEREIN” (CULTURE ASSOCIATION) AND THE “KRÄUTERVEREIN” (HERBS ASSOCIATION) WERE VERY MUCH INVOLVED IN ORGANISING THE HISTORICALLY BASED ACTIVITIES SUCH AS CULTIVATING FLAX, “ROASTING” FLAX, SPINNING, WEAVING AND PRESSING OIL. THEY ALSO PLAYED AN IMPORTANT ROLE IN CONTACTING ELDERLY PEOPLE, COORDINATING ORAL HISTORY INTERVIEWS AND INVITING SOME OF THE INTERVIEW PARTNERS TO WORKSHOPS IN THE SCHOOL. THIS NETWORK OF PARTNERS WAS BOTH A PRECONDITION FOR A SUCCESSFUL RESEARCH PROCESS AND ALSO AN IMPORTANT TOOL FOR THE SOCIAL INTEGRATION IN THE COMMUNITY ESPECIALLY FOR THOSE WHO CARRIED THE RESPONSIBILITY FOR THE SUSTAINABLE IMPACT OF THE PROJECT (STROHMEIER AND SIEBER, 2013).

Enabling an intergenerational dialog through oral history interviews

STUDENTS AGED BETWEEN 12 AND 13 YEARS AND 16 TO 19, TOGETHER WITH THEIR TEACHERS WERE INSTRUCTED IN HOW TO UNDERTAKE ORAL HISTORY INTERVIEWS, BOTH AS A RESEARCH METHOD OF EMPIRICAL STUDY AND AS A COMMUNICATION TOOL BETWEEN THE GENERATIONS (SEE FIGURE 2). STUDENTS INTERVIEWED ELDERLY INHABITANTS OF THE VALLEY – THOSE BETWEEN 80 TO MORE THAN 90 YEARS OLD – ABOUT TRADITIONAL METHODS OF CULTIVATION AND MANUFACTURING OF FLAX AND ITS SIGNIFICANCE IN THEIR DAILY RURAL LIFE. USING THIS METHOD OF INTERGENERATIONAL COMMUNICATION, STUDENTS AND TEACHERS ACCESSED LOCAL KNOWLEDGE AND TRADITIONAL KNOWLEDGE. IN ADDITION THE PROCESS GENERATED TOPICS OF

RESULTS

“blossoms” produced by the flax-project

THE ORAL HISTORY INTERVIEWS NOT ONLY SERVED AS A TOOL FOR COMMUNICATION AND LEARNING, BUT ALSO AS AN EMPIRICAL BASIS FOR SEVERAL RESEARCH PRODUCTS, INCLUDING DOCUMENTARY OF LOCAL NARRATIVES AND LOCAL PRACTICES RELATED TO FLAX. THE PROJECT PRODUCED SECONDARY PRODUCTS USING VARIOUS MEDIA TO COMMUNICATE RESEARCH RESULTS TO THE PARTICIPATING SCHOOLS, THE LOCAL POPULATION AND INTERESTED TOURISTS IN THE LESACHTAL. MEDIA PRODUCTS INCLUDED SMARTPHONE APPLICATIONS WERE DEVELOPED THROUGH THE INITIATIVE OF YOUNG PEOPLE WHO DECIDED WHAT WAS IMPORTANT TO SHARE WITH TOURISTS FROM THEIR VIEWPOINT. OTHER PRODUCTS INCLUDED A DOCUMENTARY MOVIE AND AN ANIMATED CARTOON DRAWN BY THE SCHOOL STUDENTS.

IN CLASS, THE STUDENTS CREATED A FLAX BLOG WITH PHOTOS AND SOUND FILES ALL TO COMMUNICATE RESEARCH RESULTS. ONE OF THE SOUND FILES AND A VIDEO-CLIP WAS A “FLAX-RAP” A SONG WRITTEN AND PERFORMED BY THE STUDENTS. THE “FLAX-RAP” WAS PERFORMED AT THE OPENING CEREMONY OF THE RENOVATED AND RE-PLANTED CLOISTER-GARDEN MONASTERY OF MARIA LUGGAU. IN THE NEW CLOISTER GARDEN STUDENTS PLANTED AND HARVESTED FLAX IN A BED AT THE VERY FRONT OF THE GARDEN. THIS SMALL FLAX-FIELD DRAW A LOT OF ATTENTION ESPECIALLY DURING THE FLOWERING PERIOD, WHEN A BRIGHT BLUE OF LANDSCAPE HELPED PEOPLE TO IMAGINE HOW THE LANDSCAPE LOOKED LIKE AT THE END OF TRADITIONAL FLAX CULTIVATION. ALL THESE PRODUCTS HAD THE AIM OF COMMUNICATING RESEARCH RESULTS AS WIDELY AS POSSIBLE AND IN THE PROCESS EMPHASISED THAT INCREASING LOCAL COMMUNICATION ABOUT THE TRADITIONS OF FLAX CULTIVATION AND THE TRADITIONAL AGRICULTURAL LANDSCAPE REQUIRED A WORKING CO-OPERATION WITH LOCAL STAKE-HOLDERS.

THIS STUDY ILLUSTRATES THE CONNECTIONS BETWEEN LOCAL KNOWLEDGE, LANDSCAPE AND REGIONAL IDENTITY. IT ALSO PROVIDED A SCIENTIFIC BASIS FOR THINKING OF “INTERGENERATIONAL WORKING TOGETHER” AS A WAY IN WHICH THE FUTURE OF A CULTURAL LANDSCAPE IN RELATION TO SUSTAINABLE CULTURAL DEVELOPMENT AND COMMON WELFARE IN A REGION CAN BE DEVELOPED. A METHOD OF LEARNING THAT CONNECTS PRACTICAL EXPLORATION OF LANDSCAPE WITH ELDERLY AND YOUNG PEOPLE WORKING TOGETHER, AND THE TRANSFER OF LOCAL KNOWLEDGE THROUGH DIFFERENT MEDIA PRODUCTS IS INCREASINGLY REGARDED AS A POSITIVE WAY OF DEVELOPING LOCAL UNDERSTANDING AND IDENTITY. LANDSCAPE IS VIEWED MORE AND MORE BY YOUNG PEOPLE AS BOTH A GEOGRAPHICAL SPACE AND AS A CULTURAL CONCEPT. SCHOOL PUPILS GAIN AN APPRECIATION OF THE IMPORTANCE OF LOCAL KNOWLEDGE AND, DURING HAND RESEARCH, AN INCREASED LANDSCAPE AWARENESS.

WE EXPLORED THE INTERRELATIONSHIPS BETWEEN ASPECTS OF “LEARNING BY DOING” THROUGH

TO DO WITH CONTEMPORARY LIFE AS WELL AS LIVING IN THE PAST, THROUGH THEIR PERSONAL BIOGRAPHIES. THROUGH THIS FORM OF INTERGENERATIONAL LEARNING PUPILS GAINED VALUABLE AND PERSONALLY RELEVANT KNOWLEDGE REGARDING THE USE OF THE LAND AND THE PROCESSING OF FLAX AND LIFE IN THE PAST. MOREOVER, THEY WERE ALSO CONFRONTED WITH ATTITUDES AND VALUES THAT SOMETIMES CONTRASTED WITH THEIR OWN, SUCH AS FRUGALITY, THE ENJOYMENT OF WORK AND THE APPRECIATION OF ORDINARY THINGS LIKE FOOD AND DRINK. FURTHERMORE, THE PUPILS CONTRIBUTED TO THE COMMUNICATION OF SCIENTIFIC RESEARCH RESULTS THROUGH DEVELOPING DIFFERENT MEDIA PRODUCTS, SUCH AS AN APP, PROJECT VIDEO, RADIO BROADCAST, DOCUMENTARY FILM AND CARTOON, THE “FLAX-RAP” SONG AND PRESENTATIONS AT SEVERAL EVENTS.

THE QUESTIONNAIRE DATA COLLECTED FROM THE 35 PUPILS WHO WERE ACTIVELY INVOLVED IN THE PROJECT, SHOW THAT THE TOPIC OF FLAX AND THE PROJECT ITSELF CREATED A STRONG INTEREST AMONGST STUDENTS. THEY WERE PARTICULARLY EXCITED BY THE PRACTICAL HANDS-ON ACTIVITIES RELATED TO FLAX FROM THE CULTIVATING AND HARVESTING TO THE PROCESSING. FURTHERMORE THE HISTORICAL AND THEORETICAL APPROACH TO THE ISSUE WAS APPRECIATED BY ALMOST ALL PUPILS RATED THE PROJECT AS A WHOLE AS “VERY GOOD” OR “GOOD”. THE MAIN CHARACTERISTICS OF THE LESACHTAL FROM THE VIEW POINT OF THE PUPILS ARE THE VILLAGER CULTURAL TREASURES SUCH AS THE BASILICA OF MARIA LUGGAU AND ITS CLOISTER GARDEN, THE MILLS, THE LOCATIONS FOR PROCESSING FLAX AS WELL AS THE BEAUTY OF UNTOUCHED NATURE. HOWEVER, WHEN LOOKING INTO THE FUTURE THE MAJORITY OF THE PUPILS BELIEVE THAT THE LESACHTAL WILL DEVELOP THROUGH GREATER URBANISATION, MODERNISATION AND A GROWING POPULATION. 27% OF THE PUPILS WELCOME THIS DEVELOPMENT, WHEREAS A SIMILAR PROPORTION OF 27% INDICATED THAT THEY LIKE THEIR REGION AS IT IS.

THE EVALUATION SHOWED THAT PUPILS IDENTIFY STRONGLY WITH AND VALUE THEIR REGIONAL IDENTITY. FIGURE 3 SHOWS THAT PUPILS TENDED TO HAVE A SLIGHT TENDENCY TOWARDS A SPACE-RELATED IDENTITY. HAVING SAID THAT IT MUST BE MENTIONED THAT IN 2014 ONLY 10 PUPILS (AGE 12-14) OF THE LOWER SECONDARY SCHOOL IN LESACHTAL WERE SURVEYED. IN 2013 9 PUPILS (AGE 16-19) OF THE NEW SECONDARY SCHOOL HERMAGOR (A TOWN OUTSIDE LESACHTAL) WERE SURVEYED IN ADDITION, WHO DO NOT COME FROM LESACHTAL. FURTHERMORE IT MUST BE REMEMBERED THAT THESE FIGURES REFLECT THE VIEWPOINT OF 12-18 YEAR OLDS WHO HAVE NOT LIVED ANYWHERE ELSE. THUS, THE POSITIVE DEVELOPMENT TOWARDS A STRONG REGIONAL IDENTITY CANNOT BE INTERPRETED MERELY DUE TO THE PROJECT. THE PUPILS STRONGLY FEEL DEEPLY ROOTED TO THEIR REGION BECAUSE THIS IS THE PLACE WHERE THEY WERE BORN, GREW UP AND FEEL COMFORTABLE. MOST PUPILS WISH TO FIND A JOB IN THE REGION IN THE FUTURE. ALTHOUGH IT IS APPARENT THAT FULFILLING THIS DESIRE WILL BE DIFFICULT BEARING IN MIND THE LIMITED EDUCATIONAL AND JOB OPPORTUNITIES IN THE LESACHTAL.

DISCUSSION AND CONCLUSION

THERE ARE FUNDAMENTAL DIFFERENCES OF OPINION IN SOCIAL AND CULTURAL SCIENCE THE MEASUREMENT OF PROJECT SUCCESS AND IMPACT. SOME CONSIDER THAT RESEARCH EXPLAIN SPECIFIC STRUCTURES AND PROCESSES OF CHANGE, AND MIGHT COMMUNICATE RESULTS. HOWEVER, IT IS LEFT TO OTHERS TO TRANSLATE THE RESEARCH OUTCOMES INTO ACTIONS AND PRACTICES. IN THE CASE OF THE TRACING FLAX PROJECT, WHICH FOCUSED ONAL DEVELOPMENT, A DIFFERENT PERSPECTIVE ON THE EVALUATION OF RESEARCH RES THEIR IMPACT IN AND ON SOCIETY WAS CHOSEN. THE PROJECT DESIGN DID NOT SEPARAT RESEARCH PROCESS FROM THE PRACTICAL APPLICATION OF RESEARCH OUTCOMES IN TH

THE EXPLANATION OF STRUCTURES AND CHANGE PROCESSES LIES IN THE HANDS OF BOT RESEARCHERS AND THOSE PEOPLE AND INSTITUTIONS IN THE REGION TAKING PART IN A P THUS, THE RESEARCH RESULTS DO NOT HAVE TO BE TRANSLATED INTO THE LOCAL AS THEY ARE PART OF THE LOCAL CULTURE AND KNOWLEDGE. OUR GOALS IN THE PROJECC CONNECTED WITH THE GOALS DEFINED BY OUR PARTICIPATING PARTNERS WITH THE JOINT GOAL BEING TO HELP THE REGION TO DEVELOP INTO A LONG TERM SUSTAIN RELIANT ECONOMY. THE STEADY DECLINE IN POPULATION, ALTHOUGH IT IS FAR FROM DE-POPULATION, THE REMOTENESS TO INDUSTRIAL CENTRES IN THE REGION, THE LACK O THE VALLEY, THE AGING POPULATION AND LOSS IN INFRASTRUCTURE - ALL NEED CONTEX SOLUTIONS. THE PROJECT ON FLAX WILL CERTAINLY NOT ANSWER ALL THE QUESTIONS O DEVELOPMENT, HOWEVER THE RECREATION OF THE FLAX HISTORY MIGHT HELP TO SOME NEW TOURISTS TO THE LESACHTAL AND MIGHT CREATE SOME ADDED VALUE IN TER OF ECONOMY.

WHAT THE PROJECT HAS ACHIEVED ALREADY IS TO CREATE AND SUPPORT A PERSPECTIVE TURAL SUSTAINABILITY (KRAINER & TRATTNIG 2007), AND TO ENABLE A COMMUNITY TO R AND RE-DEFINE REGIONAL IDENTITY BY MEANS OF A COLLECTIVE REFLECTION ON ITS OWN AND CONSEQUENTLY ITS OWN FUTURE. THIS PERSPECTIVE IS VERY MUCH BASED ON SPEC CONCRETE PRODUCTS AND PROCESSES. TO RE-ENACT A TRADITIONAL WORK PROCESS IN A TEXTILE FABRIC NOT ONLY GIVES SENSE AND MEANING TO A BUILDING ("BRECHELHÜTTE ALSO RELATES TO THE CULTURAL LANDSCAPE FOR CULTIVATING FLAX AND TO THE COMP TIONAL KNOWLEDGE THAT LOCAL ELDERLY PEOPLE CAN PROVIDE. A SENSE OF COMMUNI A STRENGTHENED LOCAL AND REGIONAL IDENTITY ARE THE CULTURALLY SUSTAINABLE RE THE PROJECT. THE PROJECT RECEIVED A SUSTAINABILITY AWARD FROM THE AUSTRIAN UN COMMISSION IN 2014. FURTHERMORE, THE PARTICIPATING PUPILS WERE GIVEN THE AWA SUSTAINABILITY AMBASSADORS BY THE FEDERAL STATE OF CARINTHIA.

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SION, THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION. THE PURPOSE OF THE PROGRAMME WAS TO GIVE FINANCIAL SUPPORT TO ACTIVITIES AND INITIATIVES AIMED AT THE PROMOTION OF AN ACTIVE EUROPEAN CITIZENSHIP. IN THE YEARS 2013-2014 THE ECO-WAS PROJECT AIMED TO INCREASE ECO-FRIENDLY BEHAVIOUR IN RELATION TO RECYCLING AND REUSE THROUGH INTERACTION AND PARTICIPATION AMONG EUROPEAN CITIZENS. THE PROJECT ALSO PROMOTED OPPORTUNITIES FOR A GROWTH IN CITIZENSHIP IN RELATION TO WASTE MANAGEMENT, FOLLOWING GUIDELINES SET OUT BY THE EUROPEAN PARLIAMENT AND THE COUNCIL OF EUROPEAN UNION (2008), WHICH PUT AN EMPHASIS ON PREVENTION, REUSE AND RECYCLING.

STARTING FROM THE COMMON ISSUE OF WASTE, ECO-WAS INVOLVED A NUMBER OF DIFFERENT COMMUNITIES: ABEGONDO (SPAIN), HASSELT (BELGIUM), LUBLIN AND SOSNOWIEC (POLAND), MÖLNÄS (SWEDEN) AND TRAVERSETOLO (ITALY). THE PROJECT GAVE PEOPLE IN THESE MUNICIPALITIES THE OPPORTUNITY TO INTERACT AND ACTIVELY PARTICIPATE IN A SHARED PLAN AND ACTION ACROSS DIFFERENT EUROPEAN COUNTRIES. IT AIMED TO RAISE AWARENESS ABOUT COMMON PROBLEMS AND TO SEEK POSSIBLE STRATEGIES FOR THE IMPROVEMENT OF THE QUALITY OF COMMUNITY LIFE (BOTH AT A LOCAL AND EUROPEAN LEVEL) IN RELATION TO WASTE MANAGEMENT.

THE PROJECT WAS ALSO SEEN AS A FRUITFUL WAY TO PROMOTE A COMMUNITY APPROACH TO SUSTAINABILITY IN ACCORDANCE WITH A RECENT COMMUNICATION OF THE EUROPEAN COMMISSION THAT UNDERLINES: "THE TERRITORIAL APPROACH TO DEVELOPMENT IS CHARACTERIZED BY A DYNAMIC BOTTOM-UP AND LONG-TERM PROCESS BASED ON A MULTI-ACTOR AND MULTI-SCALE APPROACH, IN WHICH DIFFERENT LOCAL INSTITUTIONS AND ACTORS WORK TOGETHER TO IDENTIFY PRIORITIES, AND PLAN AND IMPLEMENT DEVELOPMENT STRATEGIES" (EUROPEAN COMMISSION 2013, P.5). WITHIN THIS FRAMEWORK EACH EUROPEAN PARTNER DECIDED TO ELABORATE THE PROJECT BASED ON SPECIFIC NEEDS OF THEIR LOCAL COMMUNITY.

THE MUNICIPALITY OF TRAVERSETOLO IS A VILLAGE WITH A POPULATION OF 9,460 PEOPLE, LOCATED IN THE FOOTHILLS BELT OF THE PROVINCE OF PARMA - PO RIVER VALLEY, IN NORTH-EAST ITALY AND HAS AN ECONOMY MOSTLY BASED ON AGRICULTURE AND AGRI-FOOD SYSTEMS. THE MUNICIPALITY HAS A STRATEGIC ENVIRONMENTAL MANAGEMENT PRIORITY TO INCREASE CITIZENS' INVOLVEMENT IN, AND AWARENESS OF, WASTE SEPARATION AND RECYCLING AND AS A RESULT OF THIS LONG PRACTICAL EXPERIENCE, ELABORATED THE ECO-WAS PROJECT TOGETHER WITH OTHER EUROPEAN PARTNERS. SEPARATE WASTE COLLECTION HAS BEEN OPERATING IN TRAVERSETOLO SINCE 1999, AND IN 2011 AN UPDATED STRATEGY INTRODUCED DOOR-TO-DOOR COLLECTION OF HOUSEHOLD AND COMMERCIAL WASTE SEPARATED INTO: PAPER AND CARDBOARD, PLASTICS, ORGANIC AND RESIDUAL WASTE. THE COLLECTION OF GLASS, VEGETABLE WASTE, MEDICINES AND OTHER ITEMS, IS STILL THROUGH ON-STREET BINS, WHILST HAZARDOUS M

DAILY HABITS IN THE MANAGEMENT OF HOUSEHOLD WASTE AND HOW THIS CAN BE IMPROVED. ECO-WAS ALSO ALLOWED SCHOOLS TO SHARE THESE REFLECTIONS WITH THE LOCAL COMMUNITY AND FIND OUT HOW DIFFERENT ACTORS AND INSTITUTIONS ARE ABLE TO WORK TOGETHER IN DEVELOPING COMMON PLANS AND STRATEGIES (GLASS ET AL., 2012).

THE PROJECT HAS ALSO ENCOURAGED THE CULTURAL GROWTH OF CHILDREN AND THEIR COMMUNITY. THIS SUPPORTS THE IDEA THAT SCHOOLS CAN ONLY STRENGTHEN THEIR ROLE IN FUTURE SOCIETIES IF THEY BECOME LEARNING NETWORKS, REFLECTING THE NEEDS AND PROBLEMS OF COMMUNITIES THEY ARE PART OF (MAYER AND TSCHAPKA, 2008; JENSEN, WOOLVERTON, 2003).

THE IMPORTANCE OF SHARING A SPECIFIC APPROACH TO EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) ALSO NEEDS TO BE EMPHASISED. THE ECO-WAS APPROACH HAD A NUMBER OF SPECIFIC FEATURES. ONE OF THESE WAS THAT THE PROJECT STARTED FROM SCHOOLS INVOLVED PEOPLE OF DIFFERENT AGES IN ALL THE CONTEXTS OF THEIR DAILY LIFE. A SECOND BELIEF THAT EDUCATION AND LEARNING IS A TRANSVERSAL PROCESS WHICH INVOLVES ALL SCHOOL DISCIPLINES BUT ALSO DIFFERENT LEARNING ENVIRONMENTS, FORMAL, NON-FORMAL AND INFORMAL (UNECE, 2005; UNESCO, 2005; WALS, 2010).

METHODS

IN ORDER TO ELABORATE A COLLABORATIVE PROPOSAL, THE MUNICIPALITY OF TRAVERSE TO RIVER ORGANISED A NUMBER OF MEETINGS TO DISCUSS THE INVOLVEMENT OF SCHOOLS IN THE PROJECT. DESPITE THE FACT THAT SCHOOLS DO NOT USUALLY WORK TOGETHER, THIS PHASE RESULTED IN THE PARTICIPATION OF ALL SCHOOLS WITHIN THE MUNICIPALITY. THE SCHOOLS INVOLVED

- NURSERY SCHOOL "IL PAOLETTI" (N° 170 STUDENTS, 0-6 YEARS OLD),
- NURSERY SCHOOL "MADONNA DI FATIMA" (N° 54 STUDENTS, 3-6 YEARS OLD),
- NURSERY SCHOOL "MICHELINO MICHELI" (N° 93 STUDENTS, 3-6 YEARS OLD),
- PRIMARY SCHOOL "GABRIELE D'ANNUNZIO" (N° 470 STUDENTS, 6-11 YEARS OLD),
- JUNIOR HIGH SCHOOL "ALESSANDRO MANZONI" (N° 262 STUDENTS, 11-14 YEARS OLD),
- TECHNICAL HIGH SCHOOL (WITH AN ECONOMIC CURRICULUM) "MARIA LAURA MAINETTI" (N° 70 STUDENTS, 14-19 YEARS OLD).

AFTER THE PRELIMINARY MEETINGS, A PARTICIPATORY PLANNING MEETING WAS ORGANISED INVOLVING THE TEACHERS OF ALL THE SCHOOLS AND THE LOCAL PARTNERS. IN NOVEMBER 2013 A WORK PLAN WAS DRAFTED AND IDEAS FOR SEVERAL ACTIVITIES TO BE DEVELOPED DURING THE 2013-2014 SCHOOL YEAR AGREED.

ACTION 1 INVOLVED PRELIMINARY TRAINING SESSIONS INCLUDING THEORETICAL/PRACTICAL

STUDENTS WERE INVOLVED AS ACTIVE RESEARCHERS, SUPPORTED BY THEIR TEACHERS AND A NUMBER OF LOCAL PARTNERS. THE RESEARCH PROCESS WAS PARTICIPATORY AND DEVELOPED "WITH" STUDENTS (BARRATT HACKING ET AL., 2013), ENABLING THEM TO CONTRIBUTE TO DEFINING THE FOCUS OF THE PROJECT, THE ELABORATION OF QUESTIONNAIRE, DATA GATHERING, ANALYSIS AND INTERPRETATION OF THE RESULTS. IN ADDITION, THIS APPROACH CAN EMPOWER THE STUDENTS AND RAISE THEIR SOCIAL CONSCIOUSNESS IN ORDER TO CHANGE THEIR BEHAVIOUR.

AFTER SOME LESSONS ON ISSUES ON WASTE MANAGEMENT AND THE METHODOLOGICAL ASPECTS OF UNDERTAKING A SURVEY, THE HIGH SCHOOL STUDENTS ELABORATED A FIRST DRAFT OF THE QUESTIONNAIRE SHARED WITH THE LOCAL PARTNERS BEFORE A FINAL VERSION WAS PRODUCED.

THE INVESTIGATION WAS DEVELOPED AROUND 20 ITEMS ORGANISED MAINLY AS CLOSED AND SEMI-CLOSED QUESTIONS. THE NUMBER OF OPEN QUESTIONS WAS LIMITED SO THAT THE QUESTIONNAIRE WAS EASY TO MANAGE, SIMPLE TO UNDERSTAND AND DIDN'T REQUIRE MUCH TIME TO COMPLETE AND TO ELABORATE THE DATA. THE QUESTIONNAIRE ENDED WITH A FINAL SPACE FOR FREE COMMENTS.

THE QUESTIONS INVITED CITIZENS TO REFLECT ON THEIR PERSONAL WASTE MANAGEMENT AND WASTE MANAGEMENT IN THEIR MUNICIPALITY. QUESTIONS ASKED PEOPLE HOW INTERESTED THEY WERE IN WASTE MANAGEMENT, HOW SATISFIED THEY WERE WITH THE CURRENT PROBLEMS AND FOR THEIR SUGGESTIONS AND GENERAL COMMENTS. IN MORE DETAIL, THE QUESTIONNAIRE ORGANISED AROUND FOUR SECTIONS:

- SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE (QUESTIONS 1 TO 7);
- DAILY PRACTICE OF WASTE MANAGEMENT (FROM 8 TO 16) (AUTO-DECLARATIONS);
- PERCEPTION OF WASTE AND REFLECTION ON PERSONAL WASTE REDUCTION (FROM 17 TO 19);
- SUGGESTIONS, REQUESTS, COMMENTS ON WASTE MANAGEMENT, ADDRESSED TO THE LOCAL ADMINISTRATORS OF TRAVERSETOLO.

THE TEST WAS DISTRIBUTED TO A SAMPLE OF:

- A. STUDENTS' FAMILIES; STUDENTS, FROM KINDERGARTEN TO HIGH SCHOOL GAVE THE QUESTIONNAIRE TO THEIR PARENTS AND BROUGHT THEM BACK TO SCHOOL WITHIN A FEW DAYS;
- B. LOCAL TRADERS; HIGH SCHOOL STUDENTS ASKED THE QUESTIONNAIRE TO THE OWNERS OF A NUMBER OF BUSINESSES IN THE TOWN (GREENGROCER, HAIRDRESSER, BAKER, ETC.) THROUGH AN INTERVIEW NOTING DOWN THE RESPONSES.

IT IS INTERESTING THAT 73% OF THE INTERVIEWEES SAID THAT IF THEY SAW SOMEONE WHO DIDN'T RESPECT THE WASTE COLLECTION RULES, THEY WOULD INTERVENE: 57% WOULD EXPLAIN WHAT SHOULD BE DONE AND 16% WOULD REBUKE THE OTHER PERSON (FIG. 2).

- 14. If you see someone who doesn't respect the waste collection rules what do you do?**
- I rebuke him/her
 - I explain him/her what he/she must do
 - I don't do anything, I don't mind
 - Other:

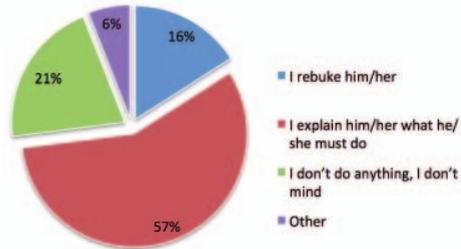


Figure 2. Question 14 and related responses.

A FURTHER CONFIRMATION ABOUT THE AWARENESS OF CITIZENS AND THEIR INVOLVEMENT IN WASTE MANAGEMENT IS SHOWN IN FIG.3. ONLY 21% OF THE INTERVIEWEES DECLARED THAT WASTE CEASED TO BE A CONCERN FOR THEM AFTER IT HAD BEEN CORRECTLY DISPOSED.

- 18. Do you feel that the issues related to waste disposal concern you even after you have thrown it away?**
- No, by that time they become someone else's problem
 - Yes, because by that time someone else must take care of it
 - Yes, because waste management has a lot of effects on people and on the environment
 - Other:
 - I don't know

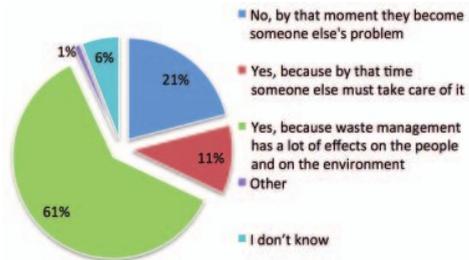


Figure 3. Question 18 and related responses.

IN THE LIGHT OF THESE RESULTS, IT SEEMS THAT A LARGE PROPORTION OF THE PEOPLE OF SETOLO ARE AWARE OF AT LEAST SOME OF THE LINKS BETWEEN PEOPLE, THE ENVIRONMENT AND ITS MANAGEMENT. THIS IS CONFIRMED BY THE RESPONSES TO QUESTION 19 WHERE 92% OF THE INTERVIEWEES CONSIDER THE REDUCTION OF WASTE TO BE VERY IMPORTANT.

IN CONTRAST WITH THIS AWARENESS, ONLY 35% OF THE SAMPLE KNOWS THAT THEY CAN DO SOMETHING TO REDUCE WASTE" (FIG. 4), WITH PREVENTION AND ATTENTION TO PURCHASES BEING MOST OFTEN MENTIONED. THE REMAINING 41% OF THE SAMPLE CLAIM THEY DON'T

ENRICHED WITH THE SUPPORT GIVEN FOR PROJECT IMPLEMENTATION BY THE TOWN COUNCIL OF TRAVERSETOLO AND BY THE SERVICES AND VOLUNTEER STAFF PROVIDED BY LEGAL VALTERMINA.

TO ENSURE THE SUCCESS OF THESE RELATIONSHIPS AMONG THE EXTERNAL ACTORS AND SCHOOLS, A NUMBER OF COLLABORATION METHODS WERE IMPORTANT. FIRST OF ALL, SPECIAL ATTENTION WAS PAID TO COMMUNICATION BETWEEN THE ACTORS THROUGH REGULAR MEETINGS. SCHOOL COMMITTEES AND INFORMAL ROUND TABLES PROMOTED AND SUPPORTED BY THE MUNICIPALITY OF TRAVERSETOLO. THESE HELPED TO GIVE FORM TO AN INCLUSIVE ENVIRONMENT FOR ALL THE PARTNERS AND TO DEVELOP A "WIN-WIN" SITUATION FOR EVERYONE INVOLVED. THANKS TO THIS INCLUSIVE APPROACH IT WAS POSSIBLE TO TACKLE THE DISCONNECTION BETWEEN SCHOOLS' TEACHING AND LEARNING AND THE DAILY LIFE OF THE COMMUNITY AND THE RESULTING LACK OF INTEGRATION BETWEEN SCHOOLS AND COMMUNITY.

THE SHARED KNOWLEDGE AND EXPERTISE OF THE PROJECT PARTNERS ALLOWED STUDENTS TO EXPERIENCE MEANINGFUL LEARNING OPPORTUNITIES AND ENABLED THEM TO DEVELOP A SENSE OF BELONGING AND AN AWARENESS OF BEING ACTORS WITHIN THEIR COMMUNITY. THROUGH THIS PROCESS, THE MOTIVATION AND ENTHUSIASM OF SCHOOL MANAGERS WHO PROVIDED SUPPORT TO SCHOOL STAFF IN GENERAL AND TEACHERS IN PARTICULAR, NEEDS TO BE UNDERSTOOD.

CONCLUSION

THE VALUE OF THE SCHOOL-COMMUNITY COLLABORATION WAS AN IMPORTANT ASPECT OF THE EVALUATION OF THE ECO-WAS PROJECT IN TRAVERSETOLO. FROM THE EVALUATION IT WAS CONCLUDED THAT THE PROMOTION OF COMMUNITY-BASED LEARNING HAD A POSITIVE IMPACT IN ADDRESSING ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT ISSUES. IN MORE DETAIL, THE COLLABORATION WITH THE LOCAL ADMINISTRATION WAS A FACTOR OF SUCCESS IN TERMS OF PROJECT COORDINATION. THE SCHOOLS INVOLVED IN A PROJECT SAW THAT IT WAS NOT JUST AN EDUCATIONAL PROJECT BUT ALSO USEFUL FOR THE COMMUNITY. THIS APPROACH CONTRIBUTED TO A FOSTERING OF NEW VALUES AND A NEW CULTURE IN SCHOOLS - A CULTURE OF SOLIDARITY, COMMITMENT AND SHARED RESPONSIBILITY (ESPINET AND MARQUEZ, 2014). IT ALSO CONTRIBUTED TO BREAKING THE BOUNDARIES BETWEEN FORMAL AND NON-FORMAL EDUCATION, SUGGESTING THAT THE COMMONLY SHARED NOTION OF LEARNING IN JUST HAPPENING FORMAL CONTEXTS MUST BE REVISED. SOCIETY TODAY REQUIRES HYBRIDISATION AND SYNERGY BETWEEN MULTIPLE SECTORS AND AS A CONSEQUENCE THE BLURRING OF THE DIVISION BETWEEN FORMAL AND NON-FORMAL CONTEXTS OF EDUCATION THAT THIS PROJECT PROVIDED (WALS, 2010). SO, THE PROJECT IN TRAVERSETOLO CAN BE SEEN AS AN OPPORTUNITY FOR THIS TYPE OF EXPANDED EDUCATION. WEAVING TOGETHER SECTORS, SCHOOL DISCIPLINES AND INSTITUTIONS.

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AbSTRACT

THIS REFLECTIVE CHAPTER DESCRIBES A CASE STUDY IN WHICH SUSTAINABILITY ISSUES WERE TAUGHT AS PART OF A GEOGRAPHY COURSE IN A SECONDARY SCHOOL IN ENGLAND. THE CHAPTER DESCRIBES A DECISION MAKING ACTIVITY UNDERTAKEN WITH 16/17 YEAR OLD STUDENTS WHO EXAMINED THE TOPIC OF FRACKING. IT THEN DESCRIBES THE REACTION OF EDUCATORS AND SUSTAINABLE DEVELOPMENT (ESD) PRACTITIONERS TO THE OUTCOME OF THIS ACTIVITY. AFTER CONSIDERING ALL THE EVIDENCE THE STUDENTS DECIDED TO SUPPORT FRACKING AND THIS REACTION OF PRACTITIONERS WERE HORRIFIED BY THIS OUTCOME. THE THIRD PART OF THIS CHAPTER FOCUSES ON THE IMPLICATIONS OF THIS REACTION AND CONSIDERS WHETHER ESD PRACTITIONERS SHOULD ONLY COMMITTED PROMOTING STUDENT CENTRED APPROACHES WHEN IT BRINGS ABOUT CHANGES IN SPECIFIC LIFESTYLE AND BEHAVIOUR CONSIDERED TO BE SUSTAINABLE BY THE ESD PRACTITIONERS THEMSELVES. IN OTHER WORDS, UNTHINKING BEHAVIOUR MANAGEMENT IS REALLY AT THE HEART OF MUCH ESD RATHER THAN EDUCATION AND THINKING CRITICALLY.

KEYWORDS

BIAS, CONTROVERSY, FRACKING, GEOGRAPHY, TRANSFORMATIVE

INTRODUCTION

THE AUTHOR OF THIS REFLECTIVE CHAPTER IS A GEOGRAPHY TEACHER OF STUDENTS AGED 16 AND LIKE MANY TEACHERS THROUGHOUT EUROPE IS MORE THAN SLIGHTLY CONSTRICTED BY THE DEMANDS OF AN EXAMINATION ORIENTATED CURRICULUM. IN ENGLAND THIS IS THE GENERAL CERTIFICATE OF SECONDARY EDUCATION (GCSE) TAKEN BY STUDENTS AGED 16, AND THE A LEVELS TAKEN BY STUDENTS AGED 17 AND 18. FIVE OR MORE GCSE'S AT GRADES A-C ARE USUALLY REQUIRED FOR ACCEPTANCE ON AN A LEVEL COURSE, AND A LEVELS ARE REQUIRED FOR ENTRANCE TO UNIVERSITY. THEY ARE IMPORTANT EXAMINATIONS FOR STUDENTS TO PASS AND ARE REQUIRED GRADES AND HENCE STUDENT AND PARENTAL EXPECTATIONS ARE UNDERSTANDABLY HIGH. PARTLY BECAUSE OF THIS, OPPORTUNITIES FOR CURRICULUM FLEXIBILITY AND INNOVATION ARE RELATIVELY LOW AS TEACHING TIME IS LIMITED AND IN THE EYES OF SOME "NOT TO BE WASTED" BY TAKING TOO MUCH TIME TEACHING A TOPIC.

AND PRESENTATION AND IN THE THIRD LESSON, PRESENT THEIR REPORTS. TWO PARENTS IN THE ENERGY BUSINESS WERE INVITED TO READ THE REPORTS, LISTEN TO THE PRESENT AND MAKE COMMENTS. ONE PARENT IS INVOLVED IN THE FRACKING BUSINESS THROUGH MANUFACTURING THE CLAY LIQUID USED TO BRING THE GAS TO THE SURFACE, WHILST THE OTHER IS INVOLVED IN THE RENEWABLE ENERGY BUSINESS, LARGELY THROUGH SELLING SOLAR PANELS – WHAT HAPPENED? IN THE RESEARCH LESSONS THE STUDENTS WERE LEFT VERY MUCH TO THEIR OWN DEVICES AND ASKED FOR SUPPORT ONLY WHEN THEY NEEDED CLARIFICATION OR EXPLANATION OF THE INFORMATION THEY HAD BEEN GIVEN OR FOUND FOR THEMSELVES ON THE WEB. IN THE PRESENTATION AND DEBATE THE GROUPS WERE JUDGED BY THE PARENTS, THEIR TEACHER AND BY EACH OTHER USING DIFFERENT CRITERIA. THE RESULTS WERE IN FAVOUR OF FRACKING BUT FOR DIFFERENT REASONS AND TO DIFFERENT DEGREES. TABLE 1 IS AN OVERVIEW OF THE RESULTS OF THE ASSIGNMENT.

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|-----------------------------------|--|
| <i>National Environmental NGO</i> | <i>Were against on the grounds of possible pollution to water sources and destruction of the countryside to extract the gas. Recommended more investment in renewable energy.</i> |
| <i>University Energy Experts</i> | <i>Were on balance, for fracking, though there were disagreements. They considered that from a scientific point of view there were risks but they were the same as other energy sources, and could be made safe. They also recommended that more investment in renewable energy was a better long term solution.</i> |
| <i>Energy Company</i> | <i>Were for on the grounds that the UK needs cheap energy and that it would generate local and national income and support local economies.</i> |
| <i>Local Community</i> | <i>Were for because they believed that the development would bring employment generally the UK and the area and provide cheaper electricity. Assurances had been given about pollution and the government had promised financial support to local communities that agreed to fracking.</i> |
| <i>Young People</i> | <i>Were for fracking. Although they recognized the dangers they agreed with the scientists that they could be overcome. Interestingly they also thought that globally cheap energy was a good idea especially for poor countries in Africa that needed to import oil to develop.</i> |

Table 1. Outcomes of the student assignment

PROFESSOR AND THE ESD COMMUNITY AT LARGE ARE THE GUARDIANS OF “RIGHT” KNOWLEDGE BUT THAT TEACHING SHOULD BE DESIGNED, NOT TO HELP STUDENTS LEARN ABOUT A CONTROVERSIAL ISSUE AND MAKE UP THEIR OWN MINDS, BUT MANIPULATE THEM INTO MAKING A PARTICULAR DECISION. WHEN REVIEWING THIS ACTIVITY AGAINST THE EIGHT ESD COMPETENCIES DESCRIBED BY STERLING (1999) AND THE OECD (STEVENS, 2014) IT SEEMS THAT THE LEARNERS TOUCHED ON MOST OF THEM: INTERDEPENDENCE, CITIZENSHIP, DIVERSITY, THE NEED FOR FUTURE GENERATIONS, QUALITY OF LIFE, UNCERTAINTY WERE ALL COVERED WITHIN THE COURSE. WHAT WAS THOUGHT BY ALL THOSE INVOLVED TO BE A PRETTY GOOD DECISION MAKING ACTIVITY (STERLING 1999; STEVENS 2014). WHAT MORE COULD HAVE BEEN DONE? THANKFULLY, THERE IS NO COMPETENCE WHICH SAYS “LISTEN TO YOUR TEACHER AND AGREE WITH HIS VIEWPOINT” THOUGH MAYBE THAT’S WHAT SOME OF THE CRITICS REALLY WANTED.

BUT PERHAPS THE DISCUSSION HIGHLIGHTS A DIFFERENCE BETWEEN THE PURPOSE OF EDUCATION, LEARNING AND THE ROLE OF THE TEACHER IN A SCHOOL AND AT A UNIVERSITY. A UNIVERSITY PROFESSOR (AND NGOs COME TO THAT) CAN BIAS THEIR LEARNING TOWARDS A PARTICULAR OUTCOME QUITE HAPPILY – AND OFTEN DO. IT IS EXPECTED THAT THE WORLDWIDE FUND FOR NATURE (WWF), GREENPEACE AND OTHER NGO’S WILL DISAGREE WITH FRACKING. TO SOME EXTENT IT COULD BE ARGUED THAT THAT’S THEIR JOB. STUDENTS AT UNIVERSITY USUALLY HAVE THE MATURITY AND CONFIDENCE TO DISAGREE WITH LECTURERS. TEACHERS WORKING WITH YOUNG STUDENTS ESPECIALLY ON CONTROVERSIAL TOPICS HAVE A DIFFERENT SET OF RESPONSIBILITIES AND HENCE A DIFFERENT WAY OF APPROACHING LEARNING. STUDENTS OFTEN BELIEVE THAT THEIR TEACHERS ARE TELLING THEM BECAUSE DESPITE ALL THE PROGRESS AND INNOVATION IN LEARNING, THIS IS STILL THE GENERAL APPROACH. THIS TOPIC COULD QUITE EASILY HAVE BEEN A POWER POINT PRESENTATION AND SOME NOTES ON FRACKING CONSIDERING THE PROS AND THE CONS AND THEN COMING TO THE CONCLUSION THAT FRACKING IS WRONG. NO DOUBT SOME OF THEM WOULD HAVE THEN ADOPTED THIS VIEWPOINT TO A GREATER OR LESSER EXTENT. HOWEVER, IN THIS ACTIVITY THE ROLE OF THE TEACHER WAS DIFFERENT. IT WAS TO HELP INTRODUCE STUDENTS TO A BROAD RANGE OF IDEAS AND SUPPORT THEM IN BECOMING “CRITICAL THINKERS”, BECAUSE IT IS CRITICAL THINKERS THAT THE WORLD WILL NEED IF WE WANT TO LIVE SUSTAINABLY IN THE FUTURE.

AT THIS POINT IT IS WORTH THE AUTHOR CONFESSING A PERSONAL DISAPPOINTMENT THAT SOME STUDENTS AGREED WITH FRACKING, BUT ALSO BEING THRILLED AT THE LEVEL OF THINKING AND REASONING SOME SHOWED IN MAKING THEIR DECISION. TO BE ABLE TO SEE THE RELATIONSHIP BETWEEN OIL PRICES AND THE ABILITY OF COUNTRIES IN AFRICA TO TAKE ADVANTAGE OF LOWER OIL PRICES TO DEVELOP MORE EFFECTIVELY IS A HIGH LEVEL OF THINKING. ONE STUDENT EVEN SAID “LOWER OIL PRICES ARE FOR BETTER AT ENCOURAGING SUSTAINABLE DEVELOPMENT IN AFRICA THAN AN INCREASE IN AID BUDGETS”. FROM A 17 YEAR OLD, THAT’S NOT A BAD ANALYSIS.

A SPECIFIC VIEW TO PROMOTE BE THAT BUSINESS OR THE ENVIRONMENT. A YOUNGER GROUP OF STUDENTS HAVE RECENTLY COMPLETED A MODULE ON THE CLOTHING INDUSTRY AND ANY OF THE INFORMATION FROM NGOs SAY ANYTHING POSITIVE ABOUT THE CONDITIONS CLOTHING FACTORIES IN CHINA. READING OTHER BOOKS ON THE TOPIC HOWEVER, IT SEES MANY OF THE GIRLS MOVING FROM VILLAGES TO WORK IN THESE FACTORIES FEEL THE QUALITY OF LIFE IS MUCH BETTER THAN IT WAS IN RURAL CHINA AND THAT MANY COMPANIES ARE MAKING REAL EFFORTS TO MAKE THINGS BETTER. ECO FASHION IS ALL WELL AND GOOD BUT 15 YEAR OLD GIRLS DON'T WEAR WOOLEN SHAWLS HAND-KNITTED BY A WOMEN'S COOPERATIVE IN PERU. THEY GO TO LOW COST FASHION CHAINS TO BUY T SHIRTS FOR 5 EURO. CHALLENGING DATA AND COMING UP WITH ALTERNATIVE QUESTIONS AND VIEWPOINTS IS SOMETHING THAT ESD SHOULD ENABLE ALL STUDENTS TO DO.

AND SECONDLY, THIS CHALLENGING NEEDS TO BE DONE WITHIN THE CONTEXT OF A POSITIVE FUTURE. ONE OF THE ISSUES FACING YOUNG PEOPLE IS AN UNDERSTANDING THAT THEY DON'T KNOW WHAT THE FUTURE WILL BE LIKE. THE GREAT PROBLEM IS THAT MOST PEOPLE TEND TO THINK THAT THE FUTURE IS GOING TO BE LIKE A BIGGER AND POSSIBLY BETTER VERSION OF THE PRESENT. HOWEVER, HISTORY TELLS US THAT THIS IS RARELY EVER THE CASE. THE FUTURE TO SOME EXTENT IS UNPREDICTABLE, UNCERTAIN AND POTENTIALLY DANGEROUS, EXCITING AND FULL OF OPPORTUNITY ALL AT THE SAME TIME. WE ARE PREPARING STUDENTS TO LIVE IN THIS WORLD IN A SUSTAINABLE WAY AND SO IT IS PRECISELY THESE CRITICAL AND CREATIVE THINKING SKILLS THAT WILL BRING ABOUT SUSTAINABILITY. I AM ALWAYS MOTIVATED BY THE FACT THAT A POSITIVE VIEW OF THE FUTURE IS THE WAY FORWARD FOR CHANGE RATHER THAN A NEGATIVE ONE AND I BELIEVE THAT THIS IS WHERE ESD HAS BEEN GOING WRONG AND THAT TO BE HONEST – WHERE THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (EFD) HAS GONE WRONG.

IN PARTICULAR THERE IS A NEED TO BE MORE POSITIVE ABOUT TECHNOLOGIES AND WELCOME MORE OF THEM. AS HAS BEEN SAID, THE ESD COMMUNITY SEEMS TO HAVE A GREAT DISLIKE FOR TECHNOLOGY AND THE RELIANCE PEOPLE PLACE ON IT TO SOLVE OUR SUSTAINABILITY CHALLENGES. AT THE BACK OF MANY PEOPLE'S MINDS IS A LOVE OF SMALL RURAL COMMUNITIES, DESPITE THE FACT THAT MOST EDUCATORS DON'T LIVE IN PLACES LIKE THIS. NOW WHILST IN PRINCIPLE IT IS RIGHT THAT WE SHOULD NOT KNOWINGLY LIVE UNSUSTAINABLE LIFESTYLES AND THEN JUSTIFY THAT TECHNOLOGY WILL SOLVE THE PROBLEMS, PROPERLY DESIGNED TECHNOLOGIES ARE BEING DEVELOPED AND WILL CONTINUE TO MAKE THE WORLD A BETTER PLACE. LET'S FACE FACTS, EVERYONE HAS THIS WILL HAVE A SMART PHONE OR ONE KIND OR OTHER, ONE OF THE MOST ENVIRONMENTALLY DESTRUCTIVE TECHNOLOGIES ON THIS PLANET, AND LIVE RELATIVELY COMFORTABLE SURROUNDED BY ALL THOSE TECHNOLOGIES THAT WE LOVE TO CHALLENGE.

A PEDAGOGY FOR UNCERTAIN TIMES

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AbSTRACT

MANY SCHOLARS AGREE THAT IT IS ESSENTIAL IN OUR RAPIDLY CHANGING WORLD FOR PEOPLE TO DEVELOP 'UNCERTAINTY COMPETENCES' COMPRISING SPECIFIC SETS OF KNOWLEDGE, ATTITUDES AND CAPABILITIES NEEDED TO DEAL WITH UNCERTAINTY, AMBIGUITY AND COMPLEXITY IN DIVERSE CONTEXTS. LEARNING TO HANDLE KNOWLEDGE UNCERTAINTY REQUIRES LEARNING ENVIRONMENTS TOLERATING, EVEN INVITING, UNCERTAINTY INTO THE LEARNING PROCESS. TERMS DESCRIBING THIS NEED HAVE BEEN USED BY GORDON ('WELCOMING CONFUSION, EMBRACING UNCERTAINTY IN LEARNING'), BARNETT ('PEDAGOGY FOR SUPERCOMPLEXITY'), ENGLISH ('NEED FOR DISCONTINUITY IN LEARNING') AND BUCKINGHAM ('NEED FOR AN OPTIMALLY PRODUCTIVE MEASURE OF EPISTEMOLOGICAL CHAOS') AMONGST OTHERS. EDUCATION FOR SUSTAINABILITY (EFS) FEATURES SUBJECT AREAS SUCH AS 'CLIMATE CHANGE' HALLMARKED BY COMPLEXITY AND UNCERTAINTY. SUCH TOPICS CAN BE DIFFICULT TO DEAL WITH IN THE STRUCTURE DELINEATED WORLD OF FORMAL EDUCATION. WHAT DOES THE IDEAL LEARNING ENVIRONMENT AND TEACHING APPROACH FOR THE DEVELOPMENT OF THESE COMPETENCES LOOK LIKE? THIS PAPER WILL CRITICALLY EXAMINE THE LITERATURE AND EXPLORE THE DEARTH OF COHERENT, DATA-BASED EMPIRICAL STUDIES.

KEYWORDS

EDUCATION FOR SUSTAINABILITY, KNOWLEDGE UNCERTAINTY, UNCERTAINTY, UNCERTAINTY COMPETENCES, 21ST CENTURY EDUCATION

INTRODUCTION

21st Century: Age of Uncertainty

ONE OF THE URGENT CHALLENGES FACING SOCIETY IS RELATED TO THE WAY IN WHICH HUMANS ADDRESS THE UBIQUITOUS NATURE, AS WELL AS THE SHEER AMOUNT OF UNCERTAIN AND AMBIGUOUS INFORMATION ABOUT THE STATE OF OUR ENVIRONMENT. THIS INFORMATION IS OFTEN INCOMPLETE, INCONSISTENT AND REGULARLY CONTRADICTORY. INFLUENTIAL BODIES SUCH AS THE IUCN (INTERNATIONAL UNION FOR CONSERVATION OF NATURE) AND IPCC (INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE) PUBLISH EXTENSIVE REPORTS ABOUT THE SEVERE AND IMPACT OF HABITAT DESTRUCTION (BAILLIE AND BUTCHER, 2012) AND THE DETRIMENTAL EFFECTS OF 'CLIMATE CHANGE' (IPCC, 2014), BASED ON STATE OF THE ART SCIENTIFIC LITERATURE. NONETHELESS, THERE REMAIN MANY UNANSWERED QUESTIONS ABOUT THESE COMPLEX

WHEN WORKING TO A STRICTLY STANDARDIZED CURRICULUM AND SO OFTEN SKIM OVER MATERIAL (MOON ET AL., 2007). THIS RESULTS IN LESS TIME FOR LEARNERS TO LEARN HOW TO CRITICALLY AND CREATIVELY ANALYSE CONTENT. TEST-DRIVEN EDUCATION FOCUSES ON STUDENTS FINDING THE RIGHT ANSWER AND CAN BE SAID TO BE BASED ON THE EXISTENCE OF CERTAIN ANSWERS. TEACHERS IN TEST-DRIVEN SYSTEMS OFTEN AVOID AN OPEN TEACHING PROCESS IN WHICH THERE ARE MULTIPLE 'RIGHT' ANSWERS. THERE ARE, HOWEVER, A FEW COUNTRIES SUCH AS SCOTLAND WHERE EFFORTS ARE BEING MADE TO MOVE AWAY FROM AN ABSOLUTE FOCUS ON TEST-DRIVEN EDUCATION AND REDESIGN THE EDUCATIONAL SYSTEM.

IN 2004 THE SCOTTISH GOVERNMENT PUBLISHED A DOCUMENT TITLED 'A CURRICULUM FOR EXCELLENCE' (SCOTTISH EXECUTIVE, 2004), WITH THE INTENTION TO PROVIDE ALL CHILDREN BETWEEN THE AGES OF 3 AND 18 WITH THE EDUCATION NEEDED TO PREPARE THEM FOR THE 21ST CENTURY. THIS DOCUMENT IDENTIFIED THE FOLLOWING FOUR KEY PURPOSES OF EDUCATION, OFTEN REFERRED TO AS THE FOUR CAPACITIES, WHICH SHOULD ENABLE EACH CHILD AND YOUNG PERSON "TO BE A SUCCESSFUL LEARNER, A CONFIDENT INDIVIDUAL, A RESPONSIBLE CITIZEN AND AN EFFECTIVE CONTRIBUTOR" (IBID, P. 12). INSTEAD OF A MORE CONTEMPORARY CONTENT-DRIVEN CURRICULUM, THE SCOTTISH GOVERNMENT AIMED AND CONTINUES TO AIM FOR A CURRICULUM THAT ENSURES THE DEVELOPMENT OF THE KNOWLEDGE, SKILLS, ATTRIBUTES AND CAPABILITIES NEEDED TO FLOURISH IN LIFE, BOTH PRIVATELY AND PROFESSIONALLY.

UNCERTAINTY COMPETENCES

Teaching beyond content-knowledge

THE IMPORTANCE OF THE DEVELOPMENT OF ATTRIBUTES AND CAPABILITIES, RATHER THAN FOCUSING PRIMARILY ON CONTENT KNOWLEDGE, IS RECOGNISED BY MANY CONTENT-DRIVEN SCHOLARS. SOME ASSERT THAT IN ORDER TO HANDLE OUR COMPLEX AND UNCERTAIN WORLD, LEARNERS NEED TO DEVELOP THE ABILITY TO CREATIVELY AND SPONTANEOUSLY USE UNCONVENTIONAL INFORMATION (LANGER ET AL., 1989). OTHERS VARIOUSLY DESCRIBE THE NEED FOR:

- STRATEGIES AND SKILLS FOR DEALING WITH UNCERTAINTY (HALL, 2010);
- REFLECTIVE THINKING SKILLS (ENGLISH, 2013);
- CAPABILITIES — THE ABILITY TO ADAPT TO CHANGE, GENERATE NEW KNOWLEDGE AND CONTINUOUSLY IMPROVE PERFORMANCE (FRASER AND GREENHALGH, 2001);
- CRITICAL THINKING SKILLS AND MORAL FORTITUDE (GORDON, 2006);
- INTEGRATED THINKING, PROBLEM SOLVING, AND PERSONAL AND SOCIAL SKILLS (FRASER, 2001);
- AN AUTHENTIC IDENTITY, A CAPACITY TO CHOOSE FROM CONFLICTING EVIDENCE AND A PREPAREDNESS TO REVISE IN LIGHT OF NEW INSIGHTS (KREBER, 2009);

Learning to cherish uncertainty

1. BEING ABLE TO USE UNCERTAINTY AS A CATALYST FOR CREATIVE ACTION
2. BEING ABLE TO EMPATHISE WITH PEOPLE WITH DIFFERENT PERSPECTIVES
3. BEING ABLE TO 'ENTERTAIN' AN ENQUIRING MIND

Learning to tolerate uncertainty

4. BEING ABLE TO ACCEPT NOT KNOWING WHAT WILL HAPPEN
5. BEING ABLE TO REFLECT ON AND CHANGE ONE'S BELIEFS REGARDING UNCERTAINTY
6. BEING ABLE TO EMPLOY LATERAL THINKING

Learning to reduce uncertainty

7. BEING ABLE TO PRIORITISE ('TRIAGE') AMONG MANY URGENT ISSUES
8. BEING ABLE TO FIND, EVALUATE AND UTILISE INFORMATION (SPECIFIC KNOWLEDGE)
9. BEING ABLE TO JUDGE THE CREDIBILITY AND COGNITIVE AUTHORITY OF INFORMATION SOURCES
10. BEING ABLE TO REASON (INDUCTIVE AND DEDUCTIVE REASONING)
11. BEING ABLE TO RESPOND IN ACCORDANCE WITH THE UNDERLYING PROBABILITIES
12. BEING ABLE TO EMPLOY PREVIOUS EXPERIENCE
13. BEING ABLE TO ASSESS ONE'S OWN ABILITY TO ACHIEVE A DESIRED OUTCOME
14. BEING ABLE TO ENGAGE A SUPPORTIVE NETWORK
15. BEING ABLE TO FORMULATE A PLAN OF ACTION TO DEAL WITH UNCERTAINTY
16. BEING ABLE TO WORK IN, AND CONTRIBUTE TO, TEAMS WITH MIXED SKILLS AND EXPERIENCE
17. BEING ABLE TO USE ONE'S INTUITION AS A SOURCE OF INFORMATION

Table 1: Uncertainty competences (Adapted from Tauritz, 2012a)

A PEDAGOGY FOR UNCERTAIN TIMES

Education for Sustainability: The playground of uncertainty

LEARNING TO HANDLE KNOWLEDGE UNCERTAINTY AND DEVELOPING THE NECESSARY COMPETENCES REQUIRES A LEARNING ENVIRONMENT TOLERATING AND EVEN INVITING UNCERTAINTY INTO THE LEARNING PROCESS. SO WHAT DOES THE IDEAL LEARNING ENVIRONMENT AND TEACHING APPROACH FOR THE DEVELOPMENT OF THESE COMPETENCES LOOK LIKE? GORDON (2008) PROMOTES EMBRACING RATHER THAN MINIMISING THE COMPLEXITIES, AMBIGUITIES, AND RISKS THAT ARE INHERENT IN THE FIELD OF EDUCATION. TERMS DESCRIBING THIS NEED HAVE BEEN

COPE IN AN UNCERTAIN WORLD (FLODEN AND BUCHMANN, 1993; GORDON, 2006; 2013). THIS 'SPACE' IS REFERRED TO AS THE 'TWILIGHT ZONE OF INQUIRY' BY DEWEY AND THE 'IN-BETWEEN REALM OF EXPERIENCE AND LEARNING' BY ENGLISH (2013). IT DESCRIBES EXPERIENCING DOUBT AS A BREAK BETWEEN THE PAST AND THE PRESENT, WHERE ONE'S PREVIOUSLY HELD KNOWLEDGE AND EXPERIENCE NO LONGER SUFFICE TO DEAL WITH THE PRESENT SITUATION. SHE REFERS TO THIS INTERRUPTION AS A 'DISCONTINUITY IN EXPERIENCE'. THIS DISCONTINUITY CAN CREATE A 'PREREFLECTIVE BEGINNING' TO LEARNING. WHEN LEARNERS VIEW THE INTERRUPTION AS AN ISSUE TO BE ADDRESSED THEY CAN THEN CHOOSE TO TRANSFORM IT INTO A 'REFLECTIVE EXPERIENCE' STIMULATING RECONSIDERATION OF PREVIOUSLY HELD KNOWLEDGE AND ACTIONS.

THE DESIGN PRINCIPLES FOUND IN THE LITERATURE CAN BE DIVIDED INTO THREE MAIN GROUPS (SEE TABLE 2):

1. PREREQUISITE FOR UNCERTAINTY IN THE LEARNING PROCESS
2. ALLOWING UNCERTAINTY INTO THE LEARNING PROCESS
3. MAKING UNCERTAINTY NEGOTIABLE IN THE LEARNING PROCESS.

- **Prerequisite for uncertainty in the learning process**

IN FOCUSSED ON UNCERTAINTY IN THE LEARNING PROCESS TEACHERS ARE CONFRONTED WITH A CONUNDRUM: THE SEEMINGLY UNSOLVABLE ANTITHESIS OF A SAFE LEARNING ENVIRONMENT VERSUS AN UNCERTAIN LEARNING ENVIRONMENT. A LEARNING ENVIRONMENT IN THIS CONTEXT REFERS TO THE TOTALITY OF THE PHYSICAL (OR VIRTUAL) SETTING, IN WHICH A LEARNER IS ENGAGED OR HERSELF TRYING TO MAKE SENSE OUT OF THINGS. LEARNERS WORKING TOGETHER ARE MUTUALLY AFFECTED BY AND RECEIVE SUPPORT FROM THEIR CO-LEARNERS. THEY ARE INFLUENCED BY THE UNDER THE ACTIVE FACILITATION OF A TEACHER AS WELL AS BEING GUIDED BY INSTITUTIONAL AS CULTURAL ROUTINES. ALL THIS TAKES PLACE IN THE PURSUIT OF INDIVIDUAL OR GROUP GOALS WITHIN AN ORGANIZED AND CO-DESIGNED LEARNING PROCESS (TAURITZ, 2012B). A LEARNING ENVIRONMENT IS ONE IN WHICH THE INDIVIDUAL LEARNERS CAN DISCUSS DIFFERENT PERSPECTIVES, IS TOLERANT TO STUDENTS HOLDING DIFFERENT VIEWS AND OPINIONS, AND WHERE JUDGMENT BOTH BY TEACHERS AND STUDENTS REGARDING THESE CLASHING VIEWS IS SUSPENDED. IN SUCH AN ENVIRONMENT, STUDENTS CAN EXPERIENCE A SUFFICIENT DEGREE OF SAFETY TO LEARN AND CHANGE THEIR IDEAS AND PERSPECTIVES. IN THE PRESENCE OF UNCERTAINTY LEARNERS NEED TO FEEL SAFE ENOUGH TO TAKE PART FULLY AND PERMIT THEMSELVES TO EXPRESS THEIR PERSPECTIVES, ENTER INTO CONFLICTS, DISPLAY VULNERABILITY AND DEVELOP NEW COMPETENCES (FORREST ET AL., 2012). THE TEACHER'S PRESENCE, GUIDANCE AND REFLECTION ON THE TEACHING PROCESS ARE CRITICAL. THERE IS ANOTHER PREREQUISITE FOR DEVELOPING UNCERTAINTY COMPETENCES AND THAT IS THE OPENNESS AND WILLINGNESS OF THE TEACHER AS WELL AS THE LEARNER TO OVERTLY ACCEPT THE CONCEPT OF UNCERTAINTY (HALL, 2012).

HAVE TO DEAL WITH A SUBSTANTIVE AMOUNT OF UNCERTAINTY THEMSELVES (SHULMAN, 2005). RAAB (2004) DISCUSSES THE VIRTUE OF THE TEACHER RESISTING GIVING ALL THE ANSWERS AND INSTEAD BECOMING 'AN EXPERT IN NOT KNOWING' AND TRUSTING THAT MORE VALUABLE INSIGHTS AND CONCEPTUALISATIONS WILL EMERGE FROM THE GROUP OF LEARNERS. THE TEACHER WILL HAVE TO COMBAT HIS OR HER OWN FEELINGS OF ANXIETY ABOUT THE OPEN-ENDEDNESS OF THE TEACHING PROCESS.

PROBLEM-BASED LEARNING CAN FURTHER STIMULATE THE DEVELOPMENT OF COPING STRATEGIES FOR UNCERTAINTY (KOH ET AL., 2008). EFFECTIVE FACILITATORS CAN HELP LEARNERS PERSIST BY HOLDING ON TO CURRENT IDEAS, MODELS AND THEORIES, THEY ARE IN EFFECT MANAGING UNCERTAINTY AND CHANGE (NEL ET AL., 2008).

TEACHING HOW TO DEAL WITH COMPLEX PROBLEMS REQUIRES AN INTER-DISCIPLINARY AND HOLISTIC EDUCATION PROCESS (MORRISON, 2008; HALL, 2014). AN INTER-DISCIPLINARY APPROACH IMPLIES LOOKING AT SEPARATE SUBJECTS AND SUBSEQUENTLY UNITING THEM; INTEGRATED KNOWLEDGE IS NECESSARY TO PROVIDE ANSWERS TO COMPLEX PROBLEMS. A HOLISTIC APPROACH REFERS TO THE EXPERIENCE OF THE TOPIC IN ITS TOTALITY. THIS SHIFT IN THINKING ENCOURAGES INCORPORATING MANY SOURCES OF KNOWLEDGE INCLUDING CREATIVITY AND INTUITION.

MAINTAINING A 'HEALTHY' AND ETHICAL LEVEL OF UNCERTAINTY IN THE EDUCATIONAL PROCESS REQUIRES THE INTRODUCTION OF SCAFFOLDING, IN OTHER WORDS GRADUAL CHANGES IN LEVELS OF UNCERTAINTY CREATING CONDITIONS FOR THE LEARNER'S UNCERTAINTY COMPETENCE AND EXPERIENCE TO DEVELOP (MORRISON, 2008; FORREST ET AL., 2012). AS THE ROLES OF TEACHER AND LEARNERS ALTERNATE, TEACHERS BECOME LEARNERS AND LEARNERS BECOME TEACHERS. AS THE RESPONSIBILITY OF THE LEARNERS IN THE EDUCATIONAL PROCESS INCREASES, CONFRONTATION WITH OPPORTUNITIES TO ENHANCE THEIR UNCERTAINTY COMPETENCES. HOWEVER, TEACHERS MUST NEVER ABDICATE THEIR RESPONSIBILITY IN FACILITATING THE LEARNING PROCESS OF THEIR STUDENTS (RAAB, 2004; SHULMAN, 2005).

IT IS IMPORTANT FOR LEARNERS TO BE EXPOSED TO CONFLICTING FRAMES OF REFERENCE (SHULMAN, 2005) AND THE REALISATION THAT FOR MOST COMPLEX PROBLEMS THERE IS NO CORRECT ANSWER. THROUGH WORKING IN SMALL GROUPS LEARNERS ARE FURTHER CONFRONTED WITH DIFFERING IDEAS AND PERSPECTIVES. LEARNERS SHOULD BE STIMULATED TO CLARIFY, EVALUATE, EXTRAPOLATE, EXPLAIN THEIR IDEAS AND RE-EXAMINE THEIR BELIEFS IN ORDER TO GAIN GENUINE KNOWLEDGE (SHULMAN, 2005; GORDON, 2006). THROUGH A PROCESS OF ACTIVE PARTICIPATION AND COMMUNICATION LEARNERS ARE NOT ONLY MADE ACCOUNTABLE TO THEIR TEACHER, BUT ALSO TO THEIR PEERS.

barnett's framework for transformational education

IN THIS FINAL PARAGRAPH THE NEED FOR DEVELOPING DIFFERENT UNCERTAINTY COMPET WILL BE REFLECTED UPON USING BARNETT'S FRAMEWORK FOR TRANSFORMATIONAL EDUC (2012). BARNETT CONSTRUCTED A TWO-AXES FRAMEWORK THAT DISTINGUISHES B FOUR DIFFERENT EDUCATIONAL APPROACHES AND THE POTENTIAL EDUCATIONAL 'OU THEY PRODUCE. THE HORIZONTAL AXIS REPRESENTS A DESIGN THAT RANGES FROM (NEGLIGIBLE AMOUNT OF UNCERTAINTY) TO 'HIGH RISK' (AMPLE AMOUNT OF UNCERTAINTY). VERTICAL AXIS RANGES FROM EDUCATION THAT EMPHASES EDUCATIONAL DEVELOPM TRANSFORMATIONAL EDUCATION.

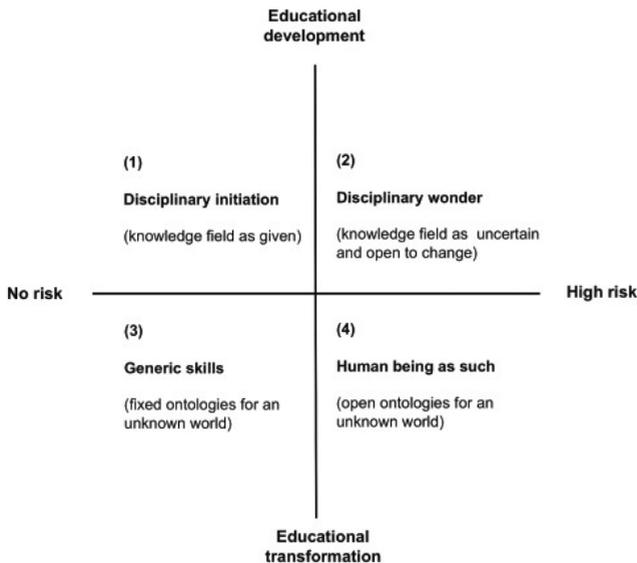


Figure 1: Barnett's framework for transformation education (2012)

Quadrant 1 IS CHARACTERISED BY PRE-EXISTING AIMS AND OBJECTIVES. UNCERTAINTIES ARE KEPT TO A MINIMUM. STUDENTS DEVELOP UNDERSTANDING AND SPECIFIC SKILLS.

2 IS CHARACTERISED BY UNCERTAINTY AND IMAGINATIVE CURRICULA DESIGNED TO PREPARE STUDENTS FOR A COMPLEX WORLD.

Quadrant 3 FOCUSES ON THE DEVELOPMENT OF SPECIFIED (GENERIC) SKILLS AND TRANSFORMING STUDENTS INTO PEOPLE WHO ARE MORE ADAPTABLELY EQUIPPED FOR AN UNCERTAIN WORLD. HOWEVER, THESE LEARNING ENVIRONMENTS ARE RELATIVELY RISK-FREE, AND THEREFORE LIMITED IN THEIR CAPACITY TO TEACH LEARNERS TO HANDLE HIGH-RISK SITUATIONS FULL OF UNCERTAINTY.

Quadrant 4 REPRESENTS EDUCATION THAT IS BOTH HIGH-RISK AND TRANSFORMATIONAL IN ORDER TO PREPARE LEARNERS FOR AN UNCERTAIN WORLD.

PLEXITY. THIS IS EVEN MORE SO WITH REGARD TO LEARNERS IN PRIMARY AND SECONDARY EDUCATION. FURTHERMORE, GUIDANCE FROM WHAT WE DO KNOW IS OFTEN NOT IMPLEMENTED. SOME KEY ISSUES THAT SHOULD BE ADDRESSED BY RESEARCHERS IN COOPERATION WITH THE EDUCATIONAL SECTOR ARE: HOW SHOULD TEACHERS COMMUNICATE ABOUT UNCERTAINTY IN A DEVELOPMENTALLY APPROPRIATE MANNER? WHAT DO CONCRETE, AGE-APPROPRIATE AND EFFECTIVE TEACHING METHODS FOR TEACHING SPECIFIC UNCERTAINTY COMPETENCES LOOK LIKE? DO OUTDOOR EDUCATION AND EDUCATION FOR SUSTAINABILITY OFFER SPECIFIC OPPORTUNITIES FOR THE DEVELOPMENT OF UNCERTAINTY COMPETENCES IN RELATION TO ENVIRONMENTAL CHALLENGES? AND WHAT ARE USEFUL INSTRUMENTS TO ASSESS THE DEVELOPMENT OF UNCERTAINTY COMPETENCES?

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SCHOOL COMMUNITY COLLABORATION IN REMOTE COMMUNITIES: CHALLENGES FOR FUTURE EDUCATION

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AbSTRACT

SCHOOLS ARE ESSENTIAL FOR THE REVITALISATION OF THE REMOTE COMMUNITIES SINCE THEY BUILD CAPACITY FOR LOCAL SUSTAINABLE DEVELOPMENT. IF REMOTE SCHOOLS ARE TO PLAY A STRATEGIC ROLE IN COMMUNITY DEVELOPMENT, THEY NEED TO RECONSIDER THEIR RELATIONSHIP TO THE COMMUNITY AND CREATE LEARNING OPPORTUNITIES THAT CONTRIBUTE TO INCREASED COMMUNITY ENGAGEMENT IN FINDING SUSTAINABLE SOLUTIONS. HOWEVER, TEACHERS SHOULD BE BETTER PREPARED FOR LIVING AND TEACHING IN REMOTE COMMUNITIES AND FOR ADDRESSING THE DISTINCTIVE EDUCATIONAL NEEDS OF THESE SETTINGS. TEACHER EDUCATION INSTITUTIONS SHOULD INTRODUCE INNOVATIVE APPROACHES THAT ENCOURAGE TEACHERS TO ENGAGE LOCAL HUMAN AND NATURAL RESOURCES IN THEIR TEACHING AND PROVIDE AN APPROPRIATE PEDAGOGICAL CONTEXT TO DEVELOP SCHOOL-COMMUNITY COLLABORATION WITH MUTUAL BENEFIT. PLACE-BASED AND PLACE-CONSCIOUS PEDAGOGIES PROVIDE SUCH AN APPROACH. THIS CHAPTER EXPLORES BOTH THEORETICAL AND PRACTICAL ASPECTS OF THESE CONCEPTS IN THE INTERNATIONAL LITERATURE AND REFLECTS ON RELEVANT PRACTICES OF THE PEDAGOGICAL DEPARTMENT OF PRIMARY EDUCATION AT THE UNIVERSITY OF THE AEGEAN IN GREECE. SEVERAL SUGGESTIONS ARE PROVIDED WITH REGARD TO TEACHER EDUCATION FOCUSING ON THE CURRICULUM, PRACTICE, NETWORKING AND THE ROLE OF ICT.

KEYWORDS

PLACE-BASED PEDAGOGIES, PRE-SERVICE TEACHER TRAINING, REMOTE COMMUNITIES, SUSTAINABLE DEVELOPMENT

INTRODUCTION

ALL OVER THE WORLD REMOTE COMMUNITIES ARE BESET WITH SERIOUS PROBLEMS. DEMOGRAPHIC AND SOCIO-ECONOMIC ISSUES SUCH AS DECLINING POPULATION, FAILING TRADE

CHALLENGE. THE CONCLUSIONS OF A THEMED ISSUE ON RURAL SCHOOLS PUBLISHED IN THE INTERNATIONAL JOURNAL OF EDUCATIONAL RESEARCH IN 2009, GENERALLY SUGGEST APPROACHES TO TEACHING AND LEARNING THAT INCLUDE LOCAL STAKEHOLDERS AND COMMUNITIES. TOMPKINS (2008) GOES EVEN FURTHER AND MENTIONS A LONGSTANDING MISTRUST BETWEEN RURAL COMMUNITIES AND THEIR SCHOOLS. THE REASONS FOR THIS MISTRUST ARE THAT SCHOOLS ARE PERCEIVED BY COMMUNITY ACTIVISTS AS ENGINES OF TALENT REMOVAL OR OF CULTURAL DESTRUCTION (E.G., IN NATIVE PLACES), AND 'COMMUNITY' IS VIEWED BY SCHOOL OFFICIALS AS "SOMETHING TO LIBERATE CHILDREN FROM" (TOMPKINS, 2008, P. 180). BETWEEN THE FACTORS THAT HAVE BEEN IDENTIFIED IN THE LITERATURE TO EXPLAIN THIS LACK OF COLLABORATION AND THE FAILURE TO RECOGNIZE THAT A SERIOUS PROBLEM EXISTS IN A COMMUNITY, THE ONGOING PROFESSIONALISATION AND CENTRALISATION OF SCHOOLS, THE RAPID TURNOVER OF TEACHERS IN REMOTE SCHOOLS, THE RELUCTANCE OF EDUCATORS TO PROMOTE SCHOOLS AS A MEANS FOR COMMUNITY DEVELOPMENT EFFORTS, LIMITED TIME AND RESOURCES, THE FACT THAT COMMUNITY PRACTICE ISN'T INCLUDED IN THE TRADITIONAL APPROACH OF SCHOOLING AND INSTRUCTIONAL INERTIA ETC (MILLER, 1993; LIARAKOU ET AL., 2014).

ARE TEACHERS WELL PREPARED FOR LIVING AND TEACHING IN REMOTE AREAS?

MOST OF THE FACTORS MENTIONED EARLIER EMPHASIZE THAT ALTHOUGH TEACHERS PLAY A CRUCIAL ROLE IN PROMOTING SCHOOL-COMMUNITY COLLABORATION THEY ARE NOT WELL-PREPARED TO ADDRESS THE DISTINCTIVE EDUCATIONAL NEEDS OF REMOTE COMMUNITIES. THE LACK OF FOCUS ON THE SPECIFICITY OF REMOTE SCHOOLS IN TEACHER PREPARATION HAS BEEN STRESSED BY MANY RESEARCHERS (E.G. DOWN AND WOOLTORTON, 2004; WHITE AND REID, 2008; GIBSON ET AL., 2013). DIFFICULTIES ARE ASSOCIATED NOT ONLY WITH PROFESSIONAL BUT ALSO PERSONAL, SOCIAL AND CULTURAL FACTORS. WITH REGARD TO INSTRUCTIONAL AND LOGISTICAL DEFICIENCIES AND CONCERNS ABOUT VARIOUS TOPICS HAVE BEEN REPORTED IN THE LITERATURE SUCH AS SPECIFIC RURAL TEACHING STRATEGIES, ORGANIZATION AND ADMINISTRATION OF REMOTE SCHOOLS, MULTI-GRADE AND MULTI-AGE TECHNIQUES, CURRICULUM PLANNING, ACCESS TO TEACHER RESOURCES, LACK OF ACCESS TO EXPERIENCED TEACHERS, LANGUAGE, ADMINISTRATIVE BURDEN AND EXTRA DUTIES TEACHERS HAVE TO CARRY OUT (GIBSON, 1994; SHARPLIN, 2002; KIZILASLAN ET AL., 2013). A CRITICAL POINT ARISING FROM THE FINDINGS OF THE RELEVANT STUDIES IS THE DEFICIENT CONNECTEDNESS BETWEEN TEACHERS AND THE COMMUNITY. TEACHERS CAN HARDLY BE CONSIDERED FAMILIAR WITH THE WAY OF LIFE IN REMOTE SETTINGS. ACCORDING TO GIBSON (1994) WHO EXPLORED PERCEPTIONS OF NEWLY APPOINTED TEACHERS TO RURAL QUEENSLAND SCHOOLS, PRE-SERVICE PREPARATION AND IN-SERVICE OR INDUCTION PROGRAMS FAIL TO RAISE AWARENESS OF EXISTING COMMUNITY PROBLEMS AND EXPECTATIONS, COMMUNITY INVOLVEMENT STRATEGIES, ETC. RECENT STUDIES CONFIRM AND ENRICH THE LIST OF THESE CHALLENGES. FOR EXAMPLE, SHARPLIN (2002), STUDYING THE EXPECTATIONS AND CONCERNS HELD BY AUSTRALIAN PRE-SERVICE TEACHERS ABOUT RURAL AND REMOTE TEACHING, LISTED AMONG THE MOST CRITICAL

PLACE PEDAGOGIES HIGHLIGHT THE IMPORTANCE OF A SITUATED CONTEXT AND EMPHATICALLY ROOTED IN THE LOCAL AND THE KNOWN. THEY HELP TEACHERS DEVELOP LEARNING OPPORTUNITIES THAT ARE BOTH MEANINGFUL AND RELEVANT TO STUDENTS BECAUSE THEY ARE CONNECTED TO THEIR OWN COMMUNITIES. IT IS IMPORTANT TO NOTE THAT PLACE-BASED PEDAGOGY IS NOT LIMITED TO OUTDOOR ACTIVITIES. IT AIMS TO EVALUATE THE APPROPRIATENESS OF OUR RELATIONSHIP WITH A SPECIFIC SOCIO-ECOLOGICAL PLACE AND THIS IS WHAT MAKES IT SO VITAL FOR COMMUNITY SUSTAINABLE DEVELOPMENT. AS GRUENEWALD (2003, P. 7) NOTES “A CRITICAL PEDAGOGY OF PLACE ENCOURAGES TEACHERS AND STUDENTS TO RE-INHABIT THEIR PLACES, THAT IS TO SAY, TO TAKE THE KIND OF SOCIAL ACTION THAT IMPROVES THE SOCIAL AND ECOLOGICAL LIFE OF A PLACE NEAR AND FAR, NOW AND IN THE FUTURE”. PLACE-BASED AND PLACE-CONSCIOUS PEDAGOGIES ENCOURAGE TEACHERS TO ENGAGE LOCAL HUMAN AND NATURAL RESOURCES IN THEIR TEACHING AND PROVIDE AN APPROPRIATE PEDAGOGICAL CONTEXT TO DEVELOP SCHOOL-COMMUNITY COLLABORATION WITH MUTUAL BENEFITS.

SUCH AN APPROACH NEEDS CONSIDERABLE CHANGES TO THE TRADITIONAL TEACHER EDUCATION CURRICULUM. PRE-SERVICE TRAINING SHOULD INCLUDE SUBJECTS AND ACTIVITIES THAT HELP TEACHERS TO LINK THEIR TEACHING AND LEARNING PRACTICES WITH THE SOCIO-ECOLOGICAL DIMENSIONS OF ‘PLACE’ AND PARTICULARLY OF REMOTE COMMUNITIES. INITIATING STUDENT-TEACHERS INTO MULTI-GRADE CLASSROOMS AND MULTI-AGE SETTINGS, INCLUDING ADULTS, WOULD BE AN IMPORTANT DIMENSION OF THE TEACHER EDUCATION CURRICULUM. FURTHERMORE THE TEACHING FOCUS SHOULD MOVE FROM THE CLASSROOM-BASED TO A COMMUNITY PERSPECTIVE THAT PLACES THE TEACHER IN THE BROADER COMMUNITY. THIS MEANS HELPING TEACHERS TO UNDERSTAND THE LINKS BETWEEN THE CLASSROOM, THE SCHOOL AND THE COMMUNITY AND DEVELOP COMMUNITY-ORIENTED TEACHING AND LEARNING. AS HALSEY (2000) NOTES, PRE-SERVICE TEACHERS NEED THE OPPORTUNITY TO CONTEMPLATE HOW TO PARTICIPATE AND RESPOND IN TERMS OF PEDAGOGY AND AS A MEMBER OF A COMMUNITY. MANAGING CURRICULUM INTEGRATION AS WELL AS DEVELOPING TEACHING APPROACHES AND LEARNING OPPORTUNITIES WITH CONTENT RELEVANT TO THE LOCAL NEEDS AND INTERESTS ARE ESSENTIAL COMPETENCES FOR A TEACHER INTENDING TO DEVELOP MEANINGFUL PARTNERSHIPS BETWEEN SCHOOL AND COMMUNITY. THESE EDUCATIONAL COMPETENCES ARE COUPLED WITH COMMUNITY RESEARCH AND NEGOTIATION SKILLS. THE DYNAMIC MODEL OF ESD COMPETENCES, PROPOSED BY THE ENSI AS A RESULT OF THE CSCT PROJECT (CURRICULUM, SUSTAINABLE DEVELOPMENT, COMMUNITY COMPETENCES, TEACHER TRAINING), PROVIDES A BASIS FOR AN INNOVATIVE CURRICULUM FOR TEACHER EDUCATION FOR RURAL AND REMOTE SETTINGS. THE COMPETENCES PROPOSED FOR THE TEACHER AT THREE LEVELS OF TEACHER’S ROLE; AS A GUIDE OF LEARNING PROCESSES, AS A MEMBER OF THE SCHOOL AND THE EDUCATIONAL COMMUNITY, AS A MEMBER OF THE SOCIETY. THIS MODEL ACKNOWLEDGES THE CONTEXT DEPENDENCY OF COMPETENCES GIVEN THAT ACTION IS ALWAYS TAKEN IN PLACE IN SPECIFIC AND VARIOUS SOCIAL AND SOCIO-CULTURAL FIELDS (SLEURS, 2000).

(HUDSON AND HUDSON, 2008; HUDSON AND MILLWATER, 2009; BEUTEL ET AL., 2011). ALL THESE UNIVERSITY-BASED INITIATIVES TRY TO FOSTER POSITIVE FEELINGS ABOUT COMMUNITIES ESPECIALLY FOR CITY-BASED FUTURE-TEACHERS. WHITE AND REID (2006-8) HOWEVER WONDER WHETHER SUCH PRACTICUM PROGRAMS CAN HELP STUDENT TEACHERS TO UNDERSTAND THE LINKS BETWEEN THE CLASSROOM, THE SCHOOL AND THE WIDER COMMUNITY SINCE "THEY DON'T PREPARE THEM TO PARTICIPATE AND RESPOND IN TERMS OF PEDAGOGY AND AS A MEMBER OF A RURAL COMMUNITY". THEY ARGUE THAT, BY WORKING WITH THE NOTIONS OF PLACE-BASED AND PLACE-CONSCIOUS PEDAGOGIES, A PRACTICUM SHOULD FOCUS ON DEVELOPING A POSITIVE FEELING ABOUT COUNTRY LIFE, WITH BOTH ITS CHALLENGES AND ITS POSSIBILITIES FOR A LIFELONG TEACHING CAREER. SUCH RURAL AND REMOTE EXPERIENCE PROGRAMS HELP STUDENTS TO UNDERSTAND A PARTICULAR RURAL PLACE, IN A WAY THAT ENABLES THEM TO FEEL MORE AT HOME AND CONFIDENT. IN THIS REGARD THEY PRESENT A PRACTICUM PROGRAM, THE 'APPLE' EXPERIENCE, DEVELOPED IN 2005 AND 2006 FOR FUTURE TEACHERS AT DEAKIN UNIVERSITY IN AUSTRALIA, THROUGH WHICH STUDENTS DEVELOPED A SENSE OF PLACE-CONSCIOUSNESS. DURING THIS PROJECT THREE KEY ISSUES I.E. FUNDS OF KNOWLEDGE, MULTIPLE LEARNING SPACES AND KNOWLEDGE PRODUCTION TEAMS WERE USED TO SUPPORT STUDENTS TO RELATE TO A REMOTE COMMUNITY IN A SUSTAINING MANNER. STUDENT TEACHERS WORKED AS CO-RESEARCHERS TO DOCUMENT THE FUNDS OF KNOWLEDGE, I.E. KNOWLEDGE AND SOCIAL PRACTICES OF CHILDREN'S EVERYDAY LIVES IN THE SMALL REMOTE COMMUNITY. STUDENT TEACHERS AND CHILDREN BECAME BUDDIES BY EXCHANGING LETTERS. CHILDREN TALKED ABOUT THEIR FAMILIES, INTERESTS ETC. SO DURING THEIR TWO-DAYS FIELD TRIP IN THE VILLAGE TO VISIT THEIR BUDDIES, STUDENT TEACHERS WERE ALREADY FAMILIAR WITH PUPILS' LIFE AND CULTURE. MULTIPLE LEARNING SPACE APPROACH WAS ALSO USED IN THIS PROGRAM. STUDENT TEACHERS ENGAGED WITH VARIOUS LEARNING SPACES, SUCH AS UNIVERSITY LECTURES, WORKSHOPS, CLASSROOMS, FARMS, RURAL COMMUNITY, ON-LINE FORUM, E-MAIL COMMUNICATIONS, VISITING THE SCHOOL STUDENTS, SCHOOL'S WEBSITE TO LEARN ABOUT SCHOOL'S LIFE AND INFRASTRUCTURE ETC. THUS, DURING THEIR FIELD TRIP THEY HAD THE OPPORTUNITY TO EXPERIENCE WHAT THEY HAD ALREADY KNOWN VIRTUALLY. FINALLY THIS PROGRAM INVOLVED THE STUDENT TEACHERS WORKING IN KNOWLEDGE PRODUCING TEAMS. ALL PARTICIPANTS (STUDENT TEACHERS, CHILDREN, TEACHERS, TEACHER EDUCATORS) WORKED COLLABORATIVELY IN SMALL GROUPS TO SHARE MULTI-AGE RESOURCES ON A THEME OF MUTUAL INTERESTING, I.E. THE ENVIRONMENT. THE ABOVE RESOURCES WERE USED IN MULTI-AGE GROUPS DURING THE FIELD TRIP.

THE UNIVERSITY OF THE AEGEAN AS A CASE STUDY

THE UNIVERSITY OF THE AEGEAN IS A QUITE NEW, PUBLIC AND A MEDIUM SIZED UNIVERSITY. ITS SCHOOLS AND DEPARTMENTS ARE LOCATED ON SIX RELATIVELY BIG ISLANDS (AREA: 80 – 1,600 KM², POPULATION: 21,000 - 115,000 INHABITANTS) OF THE AEGEAN SEA. THE SCHOOL OF HUMANITIES INCLUDING THE DEPARTMENTS OF PRE-SCHOOL AND P

THE ISLAND. THEY FOUND OUT THAT LOCAL PEOPLE ARE STILL VERY NEGATIVE TOWARDS RENEWABLE ENERGY AND CONCLUDED THAT SUCH ATTITUDES SHOULD CHANGE BY CONSIDERING THE SUCCESSFUL USE OF THIS RENEWABLE ENERGY SOURCE IN OTHER AREAS OF THE WORLD. STUDENTS, AND ESPECIALLY THOSE COMING FROM URBAN SETTINGS, COME TO KNOW A RURAL COMMUNITY AND FAMILIARIZE THEMSELVES WITH THE ECOLOGICAL AND SOCIAL DIMENSIONS OF THIS SETTING. THROUGH SUCH AN APPROACH STUDENTS ACKNOWLEDGE THE PEDAGOGICAL VALUE OF BECOMING INVOLVED IN LOCAL CONTEXTS, COLLABORATING WITH LOCAL PEOPLE AND DEVELOPING A PLACE CONSCIOUSNESS.

STUDENTS ARE ALSO INVOLVED IN DEVELOPING LEARNING ACTIVITIES BASED ON LOCAL ENVIRONMENTAL ISSUES. THEY LEARN TO USE ROLE PLAYING, ETHICAL DILEMMAS AND OTHER TECHNIQUES FOR NEGOTIATING LOCAL SOCIO-ECOLOGICAL TOPICS. THE DATA, INFORMATION AND SKILLS NEEDED TO ORGANISE THESE TECHNIQUES STEM FROM THE ENVIRONMENTAL INQUIRIES MENTIONED EARLIER. FURTHERMORE THEY ARE INITIATED INTO TEACHING AND LEARNING APPROACHES THAT COULD HELP THEM TO BUILD LEARNING OPPORTUNITIES INVOLVING THE WHOLE COMMUNITY. FOR INSTANCE STUDENTS LEARN HOW TO MAKE PARISH/COMMUNITY MAPS, A BOTTOM-UP INITIATIVE ENCOURAGING STUDENTS AND LOCAL PEOPLE TO MAP ELEMENTS (NATURAL AND CULTURAL) OF THE PLACE VALUED BY THE COMMUNITY. THEY ALSO BECOME FAMILIAR WITH FORUM THEATER, A TECHNIQUE THAT COULD HELP PEOPLE TO IMAGINE COMMON RESPONSES TO COMMUNITY PROBLEMS. SUCH APPROACHES COULD ENABLE FUTURE TEACHERS TO WORK WITH MULTI-AGE GROUPS AND DEVELOP SCHOOL-COMMUNITY PARTNERSHIPS SO THAT LOCAL ISSUES CAN BE ADDRESSED AND FUTURE SUSTAINABILITY PLANS CAN BE PLANNED IN COMMON.

IN CULTURAL AND ART STUDIES STUDENTS ARE INTRODUCED IN THE CULTURAL HERITAGE OF THE REGION. USING AN INQUIRY-BASED LEARNING AS TEACHING METHODOLOGY, STUDENTS DISCOVER THE LOCAL CULTURAL ARCHITECTURE, REALIZE THE VALUE OF THE CONSERVATION OF TRADITIONAL SETTLEMENTS, DISCOVER LOCAL DIALECTS AND REGISTER LOCAL CUSTOMS AND FAITHS. FOR INSTANCE THEY GET FAMILIAR WITH LIFE STORY INTERVIEWING, A QUALITATIVE RESEARCH METHOD FOR GATHERING INFORMATION ON THE SOCIAL TACIT KNOWLEDGE IN RURAL AND REMOTE SETTINGS. FUTURE STUDENTS GATHER LIFE STORIES FROM ELDERLY PERSONS TO HIGHLIGHT LOCAL TOPICS, SUCH AS FOLKLORE, SOCIAL PRACTICES, LOCAL HISTORY ETC. THEY ALSO PARTICIPATE IN INTERDISCIPLINARY PROJECTS OFFERING LEARNING OPPORTUNITIES ABOUT THE COMMUNITY LIFE IN RURAL AND REMOTE SETTINGS. FOR EXAMPLE A PROJECT NAMED “SCARECROW AND THE LAND OF ASCLEPIUS” WAS IMPLEMENTED SOME YEARS AGO WITHIN THE FRAMEWORK OF THE ‘ART EDUCATION - SUSTAINABILITY’ COURSE. ASCLEPIO IS A PICTURESQUE VILLAGE IN THE SOUTHERN PART OF THE ISLAND OF RHODES WHERE THE VARIOUS CULTURAL STRATIGRAPHY OF THE ISLAND IS VIGOROUSLY ALIVE. STUDENTS, PRIMARY EDUCATION PUPILS, TEACHERS, PROFESSIONALS AND REPRESENTATIVES FROM THE LOCAL AUTHORITIES AND PEOPLE FROM SEVERAL COMMUNITIES

2003) WITH THAT OF CULTURAL ECOLOGY (DILLON, 2012) ARE MERGED IN ORDER TO REVEAL HOW AN ARTS-BASED PARTNERSHIP, A CULTURAL NICHE OF ALL STAKEHOLDERS ON THE RURAL ISLAND OF LIPSI, MAY LEAD TO 'LOCATIVE MEANING-MAKING', LEARNING FOR SUSTAINABLE DEVELOPMENT AND ULTIMATELY SUSTAINABLE DEVELOPMENT OF BOTH THE SCHOOL AND COMMUNITY.

DISCUSSION

WE HAVE ALREADY DESCRIBED SOME APPROACHES AND ACTIVITIES THROUGH WHICH THE UNIVERSITY OF THE AEGEAN ATTEMPTS TO PREPARE STUDENT TEACHERS WITH REMOTE COMMUNITIES. THESE APPROACHES AND ACTIVITIES HOWEVER ARE MOSTLY DEVELOPED SEPARATELY. THE DOMINANT DISCIPLINARY APPROACH OF THE GREEK UNIVERSITY DOES NOT ENCOURAGE THE DEVELOPMENT OF AN INTEGRATED AND COHERENT CURRICULUM UNDER WHICH ALL THESE ELEMENTS COULD CONVERGE TOWARDS A COMMON PURPOSE. HOWEVER, IN ORDER FOR A TEACHER EDUCATION INSTITUTION, IN GREECE AND ANYWHERE, TO ACHIEVE A PLACE-BASED PEDAGOGY WHICH FAVOURS THE PREPARATION OF FUTURE TEACHERS NOT ONLY TO TEACH IN REMOTE SCHOOLS BUT ALSO TO CULTIVATE COLLABORATION WITH LOCAL COMMUNITIES TOWARDS SUSTAINABLE DEVELOPMENT, THE WHOLE PROGRAM SHOULD FOCUS ON MULTIDISCIPLINARY, EXPERIENTIAL AND INTERGENERATIONAL APPROACHES. STUDENT TEACHERS SHOULD BECOME CURRICULUM CREATORS AND BE ABLE TO DEVELOP TEACHING AND LEARNING ACTIVITIES SPECIFIC TO PARTICULAR LOCALES. TO CREATE SUCH CURRICULA THEY SHOULD UNDERSTAND THE DISTINCTIVE CHARACTERISTICS OF LOCAL SETTINGS AND BECOME RESEARCHERS IN DOCUMENTING THE KNOWLEDGE AND SOCIAL PRACTICES OF THE COMMUNITY. SMITH (2002) OFFERS SEVERAL APPROACHES TO PLACE-BASED LEARNING THAT CAN FOCUS EDUCATIONAL RESEARCH INTO PLACE-BASED PRACTICES: (A) LOCAL CULTURAL STUDIES, (B) LOCAL NATURE STUDIES, (C) COMMUNITY ISSUE-INVESTIGATION AND PROBLEM-SOLVING, (D) LOCAL INTERNSHIPS AND ENTREPRENEURIAL OPPORTUNITIES, AND (E) INDUCTION INTO COMMUNITY DECISION MAKING. A CRITICAL ASPECT OF THESE APPROACHES THAT THESE APPROACHES SHOULD ALSO ENCOMPASS IS THE INCLUSION OF PRACTICES THAT ENABLE STUDENT TEACHERS TO UNDERSTAND THE RATIONALE OF SCHOOL-COMMUNITY COLLABORATION AND SYSTEMATICALLY EQUIP THEM WITH STRATEGIES AND TOOLS TO INITIATE AND MAINTAIN SUCH COLLABORATION.

IN THIS RESPECT TEACHERS EDUCATION CURRICULA SHOULD FURTHER INTEGRATE THE CULTURAL AND ENVIRONMENTAL ASPECTS OF LOCAL COMMUNITIES. GIVEN THAT THE UNIVERSITIES ARE LOCATED IN DIFFERENT REGIONS EACH ONE CAN TAKE ADVANTAGE OF ITS SURROUNDINGS TO DEVELOP CURRICULA FOCUSED ON THE SPECIFIC CHARACTERISTICS OF THESE REGIONS. IN GREECE FOR INSTANCE THE UNIVERSITY OF THE AEGEAN CAN FOCUS ON THE INSULAR COMMUNITIES INCLUDING THE INSULAR REMOTE AREAS. IN TERMS OF RESEARCH THIS (RE)ORIENTATION SHOULD INVOLVE MORE RELEVANT APPROACHES SUCH AS FIELD STUDIES. IN TERMS OF TEACHING AND LEARNING

THE URBAN ZONE. IT SHOULD ALSO TAKE ADVANTAGE OF THE OPPORTUNITIES AND CHALLENGES STEMMING FROM REMOTE COMMUNITIES. THE STUDENT TEACHERS AND ESPECIALLY THOSE COMING FROM THESE ISLANDS AND ARE WILLING TO DO THEIR INTERNSHIP IN THIS AREA SHOULD BE ENCOURAGED TO DO SO. IN THIS RESPECT THE UNIVERSITY SHOULD FORMULATE A NEW INTERNSHIP POLICY FOCUSED ON THIS KIND OF COMMUNITIES.

HOWEVER IN WHAT WAYS THE UNIVERSITY COULD OVERCOME THE ECONOMIC/PRACTICAL BARRIERS? POSSIBLE SOLUTIONS MAY BE LINKED WITH COLLABORATION WITH LOCAL AUTHORITIES AND LOCAL PEOPLE. BY DEVELOPING SUCH COLLABORATION, THE STUDENTS CAN ENSURE LOCAL SUPPORT FROM LOCAL FAMILIES AND POSSIBLE FINANCING FROM LOCAL MUNICIPALITIES. LOCAL COOPERATIVES, BUSINESSES, ENTERPRISES AND ASSOCIATIONS MIGHT ALSO CONTRIBUTE TO SUCH COLLABORATION IN DIFFERENT WAYS. FOR EXAMPLE A WOMEN'S COOPERATIVE OR A LOCAL HOTEL CAN PROVIDE SUPPORT WITH ROOM AND BOARD, AND LOCAL CULTURAL / ENVIRONMENTAL ASSOCIATIONS CAN HELP THEM TO VALUE LOCAL ASSETS. IN THIS WAY STUDENTS' INTEGRATION IN THE LOCAL COMMUNITY CAN BE EASIER, WHILE IN PARALLEL PLACE CONSCIOUSNESS CAN BE CULTIVATED. IN ADDITION, SUCH A POLICY MUST INCLUDE MENTORING, THAT IS INSPIRING, PREPARING AND SUPPORTING STUDENT TEACHERS APPOINTED IN SUCH COMMUNITIES TO BECOME MENTORS OF STUDENT TEACHERS. THE EXPERIENCE REPORTED IN LITERATURE REGARDING PRACTICUM IN REMOTE AREAS AND ESPECIALLY PRACTICUM USING A PLACE-BASED APPROACH (WHITE AND REID, 2008) CAN INFORM THE DESIGN OF PRACTICUM PLANNERS. MOREOVER, THE 'RENEWING RURAL AND REGIONAL TEACHER EDUCATION CURRICULUM' (RRRTEC) PROJECT, ORGANIZED BY A GROUP OF TEACHER EDUCATION FACULTY MEMBERS IN AUSTRALIA, PROVIDES A USEFUL TOOL TO SUPPORT THE IMPLEMENTATION OF THE PRACTICUM IN RURAL AREAS (KLINE ET AL, 2012; WHITE, 2011). RRRTEC IS BASED ON A WEBSITE THAT INCLUDES A COLLECTION OF RESOURCES, SUCH AS RURAL EDUCATION RESEARCH PUBLICATIONS, STUDIES, DVDS AND PHOTOS, ADVICES FROM TEACHERS ABOUT THEIR EXPERIENCES WORKING IN RURAL LOCATIONS AND STORIES OF PRE-SERVICE TEACHERS WHO HAVE BEEN PLACED IN REMOTE SCHOOLS. IT ALSO INCLUDES POTENTIAL MODULES FOR TEACHER EDUCATION COURSES (ON UNDERSTANDING RURALITY, GETTING TO KNOW RURAL STUDENTS' LIVES AND PREPARING FOR PROFESSIONAL EXPERIENCE). THIS APPLICATION CONSTITUTES A GOOD PRACTICE THAT CAN INSPIRE TEACHER EDUCATION INSTITUTIONS.

FURTHERMORE, IN ORDER TO SUPPORT STUDENTS AND TEACHERS-MENTORS PARTICIPATING IN THE INTERNSHIP PROGRAM AS WELL AS THE TEACHERS WHO ALREADY WORK IN REMOTE COMMUNITIES NETWORKING SHOULD BE ENHANCED. ENHANCED SUPPORT NETWORKS COULD CONTRIBUTE TO THE INTEGRATION OF TEACHERS AND REMOTE COMMUNITIES AND MITIGATE THE IMPACT OF GEOGRAPHICAL ISOLATION. NETWORKING COULD POSITIVELY AFFECT DIFFERENT LEVELS

3 FOR MORE INFORMATION ABOUT THE RRRTEC PROJECT, SEE: WWW.RRRTEC.NET.AU

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PRODUCE, CONSUME, LEAD AND LIVE IN SOCIETY ARE NEEDED TO ADDRESS THE WICKED PROBLEMS AND FOSTER A SUSTAINABLE SOCIETY. THERE ARE EXAMPLES OF DIFFERENT ACTORS STARTING TO DO THIS: COMPANIES ARE TRYING TO SHAPE THEIR SOCIAL RESPONSIBILITY, SOCIAL ACTORS ARE PARTICIPATING IN TRANSITION ARENAS, INDIVIDUAL CONSUMERS ARE MOVING FOR SOCIALLY AND ENVIRONMENTALLY RESPONSIBLE PRODUCTS. IT GOES WITHOUT SAYING THAT HIGHER EDUCATION SHOULD ALSO CONTRIBUTE TO THE TRANSITION TO A SUSTAINABLE SOCIETY BELONGS TO ITS SOCIAL ROLE (DE CORT AND LAMBRECHTS, 2014).

HIGHER EDUCATION NEEDS TO ANSWER TO THIS SOCIETAL APPEAL, AND IT IS WITHIN THIS CONTEXT THAT THE CONCEPT HIGHER EDUCATION FOR SUSTAINABLE DEVELOPMENT OR SUSTAINABLE HIGHER EDUCATION (SHE) EMERGES. HESD CAN BE DEFINED AS EDUCATION THAT PREPARES STUDENTS FOR AN ACTIVE ROLE IN SOCIETY, WITH THE PURPOSE OF FOSTERING THE TRANSITION PROCESS TOWARDS SUSTAINABLE SOCIETIES. IN ORDER TO DO THIS, HIGHER EDUCATION NEEDS TO PROVIDE STUDENTS WITH COMPETENCES THAT ENABLES THEM TO COPE WITH AND FORMULATE ANSWERS TO, THE COMPLEX CHALLENGES OF THE FUTURE. IN ADDITION, HIGHER EDUCATION MUST LEAD BY EXAMPLE AND INTEGRATE SUSTAINABILITY WITHIN ITS RESEARCH, SOCIETAL OUTREACH ACTIVITIES AND CAMPUS OPERATIONS (LAMBRECHTS ET AL., 2009). IN THIS CONTEXT, THE DEFINITION AND INTEGRATION OF SO CALLED COMPETENCES FOR SUSTAINABLE DEVELOPMENT, IS SEEN AS AN IMPORTANT STEP IN THE PROCESS OF REALISING HESD.

THIS CHAPTER DISCUSSES THE ISSUE OF INTEGRATING COMPETENCES FOR SUSTAINABLE DEVELOPMENT (SD). THE DEFINITION OF THESE COMPETENCES IS HIGHLIGHTED IN SECTION 2. SECTION 3 FOCUSES ON A NUMBER OF FRAMEWORKS AND MODELS DEVELOPED TO ENSURE THE INTEGRATION OF COMPETENCES FOR SD IN THE CURRICULUM. SECTION 4 PROVIDES INSIGHT INTO THE POSSIBILITIES OF CONNECTING COMPETENCES FOR SD WITH OTHER COMPETENCE CONCEPTS IN HIGHER EDUCATION. SECTION 5 CONCLUDES THIS CHAPTER WITH CRITICAL REFLECTIONS AND RECOMMENDATIONS FOR FURTHER INITIATIVES AND RESEARCH IN THIS FIELD.

DEFINING COMPETENCES FOR SD

OVER THE PAST YEARS PARTICULAR ATTENTION HAS BEEN GIVEN TO COMPETENCE-BASED OR COMPETENCE-ORIENTED EDUCATION. DIFFERENT POLICY FRAMEWORKS HAVE BEEN DEVELOPED, SUCH AS THE EUROPEAN QUALIFICATION FRAMEWORK (EQF), AND COMPETENCES DERIVED THEREFROM TRANSLATED AND INTEGRATED INTO HIGHER EDUCATION PROGRAMS. THERE IS MUCH DISCUSSION ABOUT THE DEFINITION OF COMPETENCES, HOWEVER IT SEEMS THAT A GENERAL CONSENSUS HAS BEEN REACHED ABOUT THE MAIN CHARACTERISTIC OF COMPETENCE-ORIENTED EDUCATION, I.E. THE INTEGRATION OF KNOWLEDGE, SKILLS, VALUES AND ATTITUDES (RYCHEN AND SAUER, 2003). THE CONCEPT IS THEREFORE STRONGLY OPPOSED TO CLASSICAL FORMS OF EDUCATION FOCUSING ON TRANSFER OF KNOWLEDGE AND HIERARCHICAL TEACHER-STUDENT RELATIONSHIPS.

| Competence | Description |
|---|--|
| <i>Systemic thinking and handling of complexity</i> | <i>ability to identify and understand connections; think connectively; be able to deal with uncertainty</i> |
| <i>Anticipatory thinking</i> | <i>develop visions, apply precautionary principle, and predict flows of (re-)action; be able to deal with risks and changes</i> |
| <i>Critical thinking</i> | <i>ability to look at the world, challenge norms, practices, and opinions; reflect on one's own values and actions; give opinions to others; understand external perspectives.</i> |
| <i>Acting fairly and ecologically</i> | <i>know alternative actions; be able to orientate oneself in regards to justice, solidarity, and conservation values; reflect on possible outcomes of one's actions; take responsibility for one's actions</i> |
| <i>Cooperation in (heterogeneous) groups</i> | <i>ability to deal with conflicts; to learn from others; be able to show understanding/sympathy</i> |
| <i>Participation</i> | <i>ability to identify scopes of creativity and participation; be able to participate in the creation of initiatives</i> |
| <i>Empathy and change of perspective</i> | <i>Ability to identify onesown external perspectives; to deal with onesown and external value orientation; to put oneself in someone else's position; be able to accept diversity</i> |
| <i>Interdisciplinary work</i> | <i>ability to deal with knowledge and methods of different disciplines and be able to work on complex problems in interdisciplinary contexts</i> |
| <i>Communication and use of media</i> | <i>ability to communicate in intercultural contexts; to deal with IT; to be able to pass criticism on media</i> |
| <i>Planning and realising innovative projects</i> | <i>develop ideas and strategies; plan and execute projects; show willingness to learn for innovation; ability to deal with, and reflect on possible risks</i> |
| <i>Evaluation</i> | <i>ability to elaborate evaluation standards and carry out independent evaluations with respect to conflicts of interest and goals, uncertain knowledge, and contradictions</i> |
| <i>Ambiguity and frustration tolerance</i> | <i>conflicts, competing goals and interests, contradictions, and setbacks</i> |

Table 1. Competences for SD (Source: adapted from Rieckmann, 2012; cited in Stough et al., 2013)

FOR SD ARE ALREADY PRESENT WITHIN THE STUDY PROGRAMS, MAINLY COMPETENCES RELATED TO RESPONSIBILITY AND EMOTIONAL INTELLIGENCE. OTHER COMPETENCES, RELATED TO THINKING, FUTURE THINKING, PERSONAL COMMITMENT AND TAKING ACTION WERE VIRTUALLY ABSENT WITHIN THE COMPETENCE SCHEMES. FURTHERMORE, THE ANALYSIS SHOWED

- INTERACTIVE AND PARTICIPATIVE METHODS: E.G. SOCRATIC METHOD, GROUP DISCUSSION, ROLE PLAY, LEARNING DIARY, BRAINSTORM, PEER ASSESSMENT
- ACTION ORIENTED METHODS: E.G. LEARNING BY DOING, INTERNSHIPS, FIELD WORK, SOLVE REAL COMMUNITY PROBLEMS;
- RESEARCH BASED METHODS: E.G. BIBLIOGRAPHIC RESEARCH, PROBLEM ANALYSIS, CASE STUDIES, CONCEPT MAPPING, VALUE CLARIFICATION.

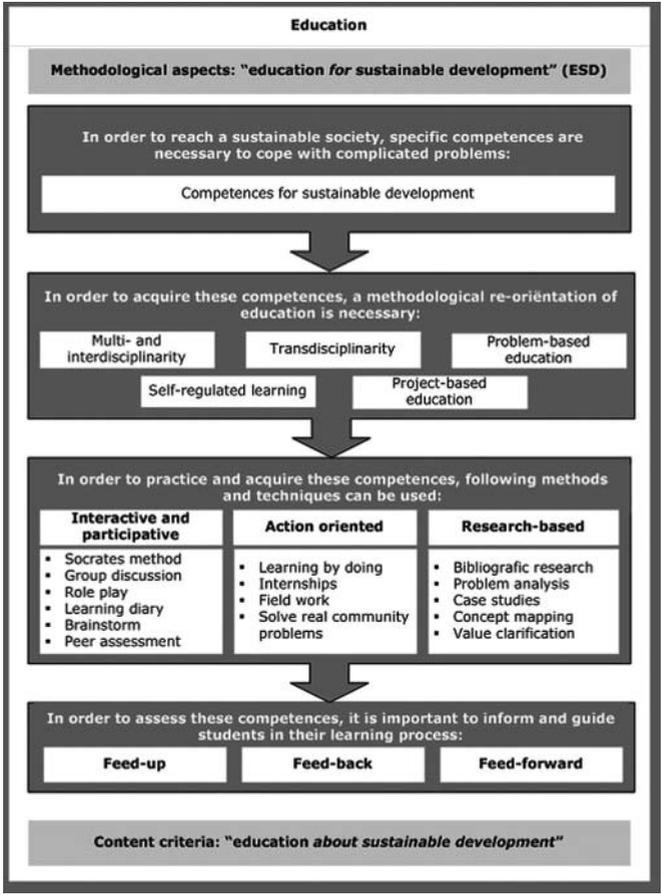


Figure 1. Sustainability integration strategy in higher education
(Source: Lambrechts et al., 2009, 2010)

RECENTLY ADDED TO THE DOMAIN, IS THE CONNECTION BETWEEN COMPETENCES FOR SD AND OTHER COMPETENCE CONCEPTS, WHICH HAVE EMERGED IN HIGHER EDUCATION SUCH AS RESEARCH COMPETENCES (LAMBRECHTS AND VAN PETEGEM, 2016, IN PRESS), AND ENTREPRENEURSHIP (LANS ET AL., 2014). THE DIFFERENT APPROACHES PROVIDE USEFUL STONES AND GUIDING PRINCIPLES, WITHOUT PRETENDING TO BE BLUE-PRINTS OR 'ONE-FIT-ALL'-MODELS. AFTER ALL, AS MOCHIZUKI AND FADEEVA (2010) POINT OUT, INDIVIDUAL STUDY PROGRAMS SHOULD DIVE INTO THE TOPIC, DEFINE THE COMPETENCES FOR SD WITHIN THE SPECIFIC CONTEXT, AND DECIDE WHICH WAY TO FOLLOW WHEN INTEGRATING THEM.

CONCLUSION AND CRITICAL REFLECTIONS

OPINIONS ARE DIVIDED REGARDING COMPETENCES FOR SD; WHETHER TO INTEGRATE NEW COMPETENCES, OR TO REORIENT EXISTING COMPETENCES WITHIN A FRAMEWORK OF SUSTAINABILITY. FIRSTLY, CRITICAL QUESTIONS CAN BE RAISED ABOUT THE USEFULNESS OF IMPLEMENTING COMPETENCES FOR SD, WITHOUT REORIENTING THE EXISTING EDUCATION SYSTEM. VAN DER WERF AND OTHERS BELIEVE THAT IT IS IMPOSSIBLE TO INTEGRATE SD WITHIN THE CURRENT STRUCTURE OF OUR EDUCATION SYSTEM (STERLING, 2004). OTHERS POINT TOWARDS THE POSSIBILITY OF THE COMPETENCE CONCEPT AS A FIRST STEP TOWARDS A MORE SUSTAINABLE EDUCATION (SLEURS, 2008). INTEGRATING COMPETENCES FOR SD SEEMS, AT LEAST IN THE CONTEXT OF CONSTRUCTIVIST EDUCATIONAL POLICIES AND PRACTICES, A LEGITIMATE STARTING POINT.

A SECOND CRITICAL QUESTION ARISES ABOUT THE PRACTICAL INTEGRATION OF COMPETENCES FOR SD. AGAIN, SEVERAL OPTIONS EXIST, RANGING FROM INTERWEAVING ELEMENTS OF SUSTAINABILITY COMPETENCES THROUGHOUT THE WHOLE STUDY PROGRAM ('HORIZONTAL INTEGRATION') TO INTEGRATING ONE EXPLICIT SUSTAINABILITY COMPETENCE COMPRISING ALL ELEMENTS LINKED TO ONE OR A GROUP OF MODULES IN THE PROGRAM. OF COURSE, IT IS ALSO POSSIBLE TO COMBINE BOTH STRATEGIES (LAMBRECHTS ET AL., 2009, 2013). AS WITH MANY CONCERNS THERE IS NO ONE FIXED STRATEGY, AND EVERY HIGHER EDUCATION INSTITUTION OR STUDY PROGRAM SHOULD DETERMINE THE BEST STRATEGY IN THEIR CONTEXT. RATHER THAN FOCUSING ON GENERAL KEY COMPETENCES, THIS STRATEGY SHOULD BE ORIENTED TOWARDS SPECIFYING SPECIFIC COMPETENCES FOR SD RELEVANT FOR THE STUDY PROGRAM, AND EMBEDDING THEM IN THE CURRICULUM (MOCHIZUKI AND FADEEVA, 2010).

A THIRD GROUP OF QUESTIONS ARISES REGARDING THE ASSESSMENT OF COMPETENCES FOR SD: SHOULD WE ASSESS THEM? AND, IS IT POSSIBLE TO ASSESS THEM? THESE QUESTIONS RELATE TO THE FACT THAT COMPETENCES FOR SD ARE OFTEN CONNECTED TO ATTITUDES AND VALUES. THESE SO CALLED 'SOFT-SKILLS', ARE OFTEN INTERPRETED AS BEING DIFFICULT, EVEN IMPOSSIBLE, TO ASSESS. THIS IS A BARRIER TO INTEGRATE THEM INTO HIGHER EDUCATION STUDY PROGRAMS, AS THE COMPETENCE CONCEPT IN GENERAL IS OFTEN INTERPRETED

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THE ROLE OF HIGHER EDUCATION IN PREPARING YOUTH TO MANAGE A SUSTAINABILITY-ORIENTED FUTURE WORKPLACE

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ABSTRACT

THIS PAPER REPORTS ON A CRITICAL INTERPRETIVIST STUDY THAT INVESTIGATED THE DIFFERENT FORMS, LEVELS AND PATHWAYS OF ENGAGEMENT WITH CLIMATE CHANGE AND SUSTAINABILITY OF YOUNG PEOPLE LIVING IN DIFFERENT CONTEXTS OF VULNERABILITY AND ADAPTABILITY. THE STUDY WAS CONDUCTED IN THE NETHERLANDS AND SOUTH AFRICA, AND PARTICIPANTS WERE UNDERGRADUATE AND POSTGRADUATE UNIVERSITY STUDENTS FROM DIVERSE SOCIO-DEMOGRAPHIC AND ACADEMIC BACKGROUNDS IN THE TWO COUNTRIES. THE STUDY APPLIED VARIOUS METHODS OF DATA COLLECTION INCLUDING FOCUS GROUPS, INTERVIEWS, POLICY DOCUMENT REVIEW, AS WELL AS PARTICIPANT-OBSERVATION AT SEVERAL YOUTH AND ENVIRONMENTAL EVENTS AND FORUMS. KEY FINDINGS HIGHLIGHT THE IMPORTANCE OF BUILDING RESILIENCE AND EMPOWERING ACADEMIC AND CIVIC PLATFORMS THAT ENHANCE YOUNG PEOPLE'S COMPETENCIES TO MANAGE SUSTAINABILITY-ORIENTED LIFESTYLES AND WORKPLACES.

KEYWORDS

CLIMATE CHANGE, EMPOWERMENT, ENGAGEMENT, SUSTAINABILITY, YOUTH EDUCATION

INTRODUCTION

YOUNG PEOPLE IN HIGHER EDUCATION CONSTITUTE THE KEY LEADERS, DECISION-MAKING STAKEHOLDERS OF FUTURE SOCIETY. UNIVERSITY AND COLLEGE STUDENTS THEREFORE DEVELOP THE SKILLS AND COMPETENCIES TO LIVE AND WORK IN AN INCREASINGLY GLOBALIZED WORLD, CLIMATE-THREATENED FUTURE, AND SUSTAINABILITY-ORIENTED ECONOMY (NYONG'AI). YET IT CAN BE ARGUED THAT THE PREVAILING EDUCATIONAL SYSTEM HAS PARTLY CONTRIBUTED TO WIDENING THE GLOBAL CLIMATE CRISIS THROUGH UNIDIRECTIONAL AND INDIVIDUALISTIC VIEWS WHICH PROMOTE UNSUSTAINABLE VALUES AND PRACTICES (STERLING, 2008). ORTEGA ARGUES THAT „*the ecological crisis concerns how we think and the institutions that purport to shape and refine the capacity to think*“ (P.2). UNESCO'S DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (DESD) PUT FORWARD A NEW PURPOSE FOR EDUCATION TO REPLACE THE TRADITIONAL INFORMATIONAL APPROACH. THE CORE VISION OF THE DESD IS TO ENGAGE ALL STAKEHOLDERS IN CRITICAL, HOLISTIC AND FORE-SIGHTED EDUCATION AND RESEARCH AND TO ENCOURAGE MULTI-STAKEHOLDER AND INTERCULTURAL DIALOGUE AND COLLABORATION, PROMOTING A PATHWAY TOWARDS POSITIVE AND SUSTAINABLE SOCIETAL CHANGE (TILBURG).

REQUIRE CONTINUOUS MANAGEMENT, INNOVATION AND ACTION. DUTCH YOUNG PEOPLE BE THE FRONTRUNNERS IN DEALING WITH THESE CHALLENGES IN THEIR DAILY LIVES AS WELL AS IN WORKING TOWARDS SOLUTIONS IN THEIR COMMUNITIES AND JOBS (VAN HEESWIJK, 2010). IN SOUTH AFRICA, UNIVERSITY STUDENTS ARE FACING LONG-TERM RISKS FROM CLIMATE CHANGE AS WELL AS OVERLAPPING SOCIAL AND DEVELOPMENTAL STRESSES INCLUDING WIDESPREAD POVERTY, SOCIAL AND ECONOMIC INEQUITIES, COMPLEX GOVERNANCE AND INSTITUTIONAL PROBLEMS AND LIMITED ACCESS TO CAPITAL (MADZWAMUSE, 2010). OVERALL, SUCH COMPLEXITIES OVERBURDEN SOUTH AFRICA'S HIGHER EDUCATION GRADUATES IN PARTICULAR WHO WILL NEED TO DRIVE SUSTAINABILITY WHILST MANAGING EXISTING SOCIO-ECONOMIC AND ENVIRONMENTAL DIFFICULTIES. SUCH CONTEXTUAL COUNTRY DIFFERENCES IN TERMS OF CLIMATE CHANGE VULNERABILITY AND ADAPTABILITY PRESENT VALUABLE SETTINGS FOR EXPLORING DIVERSE FORMS, OPPORTUNITIES AND CHALLENGES FOR YOUTH ENGAGEMENT WITH CLIMATE CHANGE AND SUSTAINABILITY.

METHODS

THE STUDY APPLIES A CRITICAL INTERPRETIVIST RESEARCH APPROACH. IT SEEKS TO UNDERSTAND YOUNG PEOPLE'S EXPERIENCES THROUGH THEIR OWN ACCOUNTS AND INTERACTIONS IN A REFLECTIVE AND DIALOGIC SETTING. THE FOCUS IS ON THE ROLE OF LOCAL COUNTRY CONTEXTS (EDUCATIONAL, POLITICAL AND INSTITUTIONAL SYSTEMS) IN INFLUENCING YOUTH OPPORTUNITIES AND CHALLENGES FOR ENGAGEMENT WITH CLIMATE CHANGE AND SUSTAINABILITY. THE STUDY METHODS INCLUDED FOCUS GROUPS WITH YOUTH, SEMI-STRUCTURED INTERVIEWS WITH YOUNG PEOPLE AND EXPERTS, PARTICIPANT-OBSERVATION AT VARIOUS YOUTH EVENTS, AND A REVIEW OF POLICY DOCUMENTS.

THE STUDY PARTICIPANTS INCLUDED DUTCH AND SOUTH AFRICAN UNIVERSITY STUDENTS, GRADUATES AND POST-GRADUATES BETWEEN 18 AND 30 YEARS OLD, BOTH MALE AND FEMALE. PARTICIPATION IN THE FOCUS GROUPS AND INTERVIEWS WAS VOLUNTARY. IN SOUTH AFRICA, A TOTAL OF 10 FOCUS GROUPS WERE CONDUCTED WITH A TOTAL OF 117 STUDENTS FROM 12 UNIVERSITIES IN DIFFERENT REGIONS (INCLUDING KWAZULUNATAL, DURBAN, JOHANNESBURG, PRETORIA, GRAHAMSTOWN, PORT ELIZABETH, CAPETOWN). SEMI-STRUCTURED INTERVIEWS WERE ALSO HELD WITH UNIVERSITY STUDENTS FROM DIFFERENT ACADEMIC FIELDS AND WITH INFORMANTS OR EXPERTS INCLUDING GOVERNMENT OFFICERS, ACADEMIC RESEARCH COORDINATORS IN YOUTH OR ENVIRONMENTAL ORGANIZATIONS. THE AUTHOR ALSO ATTENDED THREE YOUTH EVENTS AS A PARTICIPANT-OBSERVER: A SOUTHERN AFRICAN REGIONAL SUSTAINABILITY CONFERENCE, A NATIONAL SUSTAINABILITY CONFERENCE, AND A YOUTH LEADERSHIP CONFERENCE. THESE EVENTS INCLUDED YOUTH PARTICIPANTS FROM DIFFERENT REGIONS OF SOUTH AFRICA AND RANGED FROM UNIVERSITY STUDENTS TO YOUNG PROFESSIONALS. IN THE NETHERLANDS, A TOTAL OF 8 FOCUS GROUPS WERE CONDUCTED WITH A TOTAL OF 66 PARTICIPANTS FROM

then switches off projector and that's it, back to normal class, no reflection, no discussion.

MANY STUDY PARTICIPANTS ALSO EMPHASIZED THE NEED FOR EDUCATIONAL REFORMS TO INCORPORATE MORE HOLISTIC THINKING AND INTEGRATE SUSTAINABILITY EDUCATION AND LEARNING INTO VARIOUS EDUCATIONAL SPACES AND DISCIPLINES. FOR EXAMPLE, A DUTCH PARTICIPANT DISCUSSED THE NEED FOR TEACHING STUDENTS THROUGH HANDS-ON/PRACTICE AND SOLUTION-BASED LEARNING APPROACHES:

Schools should do more. For me it was an important place where I got information. Not just by telling kids and giving info, but in giving them assignments, asking them to go and find out how the world works, doing research, letting them understand and look it up for themselves. Make them think about it. For example, I wrote an essay about different types of vegetarianism and looked at different arguments, it made me understand and I got convinced.

SIMILAR INSIGHTS INTO THE NEED FOR CRITICAL THINKING AND PROBLEM SOLVING SKILLS WERE DISCUSSED BY YOUNG PARTICIPANTS IN A STUDY BY BURANDT AND BARTH (2010) WHO FOUND THAT *„problem-orientation and the need to act and decide within complex real-life problems where multiple perspectives had to be integrated, was mentioned as the main precondition to acquiring new knowledge and skills“* (P. 12). UNIVERSITIES AND COLLEGES CAN OPTIMIZE THEIR ROLE AS KEY AGENTS OF SOCIAL CHANGE BY COMPREHENSIVELY INTEGRATING EDUCATION AND LEARNING FOR SUSTAINABILITY INTO THEIR FRAMEWORK OF TEACHING THROUGH A COMPREHENSIVE APPROACH THAT ENGAGES STUDENTS WITH RESEARCH, EDUCATION AND LEARNING, AND OUTREACH FOR SUSTAINABILITY (WIEK ET AL., 2011). MANNING AND WATERMAN (2010) INDICATED THAT SKILLS, VALUES, AND APTITUDES ARE ACQUIRED THROUGH ‘LEARNING BY DOING’ PEDAGOGIES FOR SUSTAINABILITY LITERACY. THEY EMPHASIZED THAT *„learning by doing goes beyond the idea that core, disciplinary or technical knowledge is straightforwardly transmitted through uncomplicated processes of teaching and learning. Rather it involves hands-on activities which facilitate knowledge, skills application, and adaptation“* (P.83). ESD CAN THUS EMPOWER YOUTH TO BECOME CORE STAKEHOLDERS AND COLLABORATORS TOWARDS A SUSTAINABLE FUTURE.

A Low Priority for ESD Education

A WIDELY SHARED THEME AMONGST PARTICIPANTS IN BOTH COUNTRIES WAS THE LOW PRIORITY GIVEN TO CLIMATE CHANGE AND SUSTAINABILITY EDUCATION IN THEIR ACADEMIC CURRICULUM. THIS IS REFLECTED IN THE FOLLOWING QUOTES BY TWO PARTICIPANTS FROM THE NETHERLANDS AND SOUTH AFRICA, RESPECTIVELY:

rather than impacts of climate change, or the diplomacy behind it and how we can change countries, or the policies that need to be adopted to get sustainability.

IN AN INTERVIEW WITH A POLICY MAKER ON THE POLITICAL DIMENSIONS OF SUSTAINABLE EDUCATION IN THE NETHERLANDS, HE EXPLAINED THAT „*the new government has announced 9 branches of industry for Netherlands to be leading in, such as chemistry; life sciences; bio-based economy; and the creative industry...the development agendas on economic reform have sustainability as an underlying principle. But at the same time they are cutting a lot of funds and investments from arts, culture, environmental studies...sure this will have an impact on how higher education manages. But anyway in Netherlands HE can decide their own programmes. So it also needs to come from there.*“

THIS REFLECTS THE INSTITUTIONAL CHALLENGES OF INTEGRATING ESD INTO HIGHER EDUCATION AND THE IMPORTANCE OF ATTAINING POLITICAL AND LEGISLATIVE SUPPORT FOR SUSTAINABLE EDUCATION.

A distinct theme expressed by many South African participants was the lack of teacher training and awareness on environmental issues such as climate change. Two FG participants stated:

They introduced new subjects on sustainability and on corporate social responsibility but used the very same teachers that had been teaching other courses. They don't have the background and understanding or skills to teach this new material...Course didn't touch on anything new except what we all already knew. Save water, electricity...There was no real depth into what happens, the process, the outcomes, the long term issues we will have to deal with in our jobs.

TEACHERS ARE NOT PROPERLY EDUCATED ABOUT ISSUES LIKE CLIMATE CHANGE ESPECIALLY THOSE IN RURAL AND UNDER-PRIVILEGED AREAS. WE NEED PROPER TEACHER EDUCATION AND IN THE COMMUNITY NEED TO LEARN THE SKILLS TO LIVE SUSTAINABLE AND EFFICIENT LIVES.

THESE INSIGHTS RESONATE WITH FINDINGS IN OTHER STUDIES EXPLORING ESD IN SOUTH AFRICA. FOR EXAMPLE, MOODLEY (2010) FOUND THAT THE ENVIRONMENTAL EDUCATION PROGRAMME IN THE GAUTENG PROVINCE „*had very little or no focus on the social and economic aspects of the environment...the practitioners sampled in the study were trained in environmental education and there appears to have been no formal training regarding education for sustainable development*“ (P.64). BOPAPE (2009) SIMILARLY INDICATED THE LACK OF TEACHER TRAINING WITHIN THE SOUTH AFRICAN ACADEMIC CONTEXT.

I hope to see more and stricter environmental laws. Perhaps as a lawyer I will play a role in bringing these laws to pass. I would like to see those communities who rely on unsustainable resources for their livelihoods successfully find alternative occupations.

ANOTHER FG PARTICIPANT FROM SOUTH AFRICA DISCUSSED THE ROLE OF THE MEDIA AND RAISING PUBLIC AWARENESS ON CLIMATE CHANGE:

I'm studying drama because I think theatre is a way to educate people and to bring about change, to influence people...So we can use theatre to raise awareness on climate change.

SIMILARLY, A DUTCH PARTICIPANT IN A SUSTAINABILITY EVENT HOPED TO WORK IN SUSTAINABLE AGRICULTURAL PRODUCTION TO MEET THE RISING CHALLENGES FROM CLIMATE CHANGE:

I am studying agriculture and I now see the effect of weather changes on produce. As a future farmer, my ideal would be to produce enough food of good quality and every year to improve soil health. That would be my contribution; my own farm to increase soil health every year. It has to be worldwide, but I'll try to do my part.

FRITZE ET AL. (2008) DISCUSSES THE FACT THAT CLIMATE CHANGE WILL GENERATE THE NEED FOR A RANGE OF DIFFERENT JOBS AND CAREERS TO SUPPORT PEOPLE AND INSTITUTIONS TO ENHANCE PEOPLE'S RESILIENCE AND "...GALVANIZE CREATIVE IDEAS AND ACTIONS IN COMMUNITIES THAT TRANSFORM AND STRENGTHEN THE RESILIENCE OF AND CREATIVITY OF COMMUNITY INDIVIDUALS" (P. 9). THE ILO (2012) ALSO INDICATED THAT CLIMATE CHANGE WILL HAVE A MAJOR IMPACT ON LABOUR MARKETS THROUGH THE CREATION OF NEW JOBS AND THE SUBSTITUTION AND TRANSFORMATION OF EXISTING JOBS. ALTHOUGH SOME JOBS MIGHT DISAPPEAR, NEW JOBS WILL BE CREATED, FOR EXAMPLE, IN THE CONSTRUCTION SECTOR BUILDING COASTAL DEFENCES AND GREEN BUILDINGS. CERTAIN JOB REQUIREMENTS WILL BE REDEFINED AS SOCIETIES MOVE FROM FOSSIL FUELS TO RENEWABLES AND WITH AN INCREASED FOCUS OF THE INDUSTRIAL SECTOR ON CLEAN TECHNOLOGIES AND OF THE SERVICE SECTOR ON ENERGY SAVINGS. SUCH FINDINGS FURTHER HIGHLIGHT THE IMPORTANCE OF INTEGRATING ESD INTO ACADEMIC CURRICULA AND EMPLOYMENT TO BUILD YOUNG PEOPLE'S KNOWLEDGE AND COMPETENCES TO MANAGE A TRANSITION TO A SUSTAINABLE WORKPLACE THROUGH SKILLS FOR CRITICAL AND FUTURES THINKING, FLEXIBILITY AND ADAPTABILITY, SOCIAL LEARNING, SUSTAINABLE TECHNOLOGIES AND INTER-DISCIPLINARY COLLABORATION.

Innovation in future Career

MANY OF THE STUDY PARTICIPANTS UNDERTAKING ENVIRONMENT-RELATED STUDIES OR C

Attitudes have to change in upcoming engineers and architectures. People in power are not really aware of these things (for example – climate change) and how to prevent them. So we as engineers, who are learning to make structures to build houses, need to learn to do it sustainability. We should focus on structures that incorporate the environment into it instead of destroying it.

VARIOUS SCHOLARS AND INSTITUTIONS HAVE EMPHASIZED THAT THE FUTURE WORKPLACE REQUIRE SKILLS IN CRITICAL AND FORE-SIGHTED THINKING, COLLABORATION AMONGST DISCIPLINES AND INNOVATIVE SOLUTIONS FOR EFFICIENT MANAGEMENT OF SCARCE RESOURCES (FAHEY, 2012; WIEK ET AL, 2011). THE EUROPEAN COMMISSION (2009) CONSIDERS THESE SKILLS ARE “THE BEST INSURANCE AGAINST UNEMPLOYMENT AND AN IMPORTANT FACTOR FOR PERSONAL DEVELOPMENT AND ACTIVE CITIZENSHIP” (P. 2). IN ADDITION THE NETHERLANDS ENVIRONMENTAL ASSESSMENT AGENCY (PBL, 2011) WARNED THAT THE DUTCH AND GENERAL EUROPEAN WORKING POPULATION, IS AGING AND EXPECTED TO DECLINE FURTHER, AND TOWARDS MORE INNOVATION, BETTER EDUCATION AND A GREENER ECONOMY TO MAINTAIN PROSPERITY AND DEAL WITH THE LONG-TERM CLIMATE CHALLENGES. YET A RECENT STUDY ON THE INTEGRATION OF SUSTAINABLE DEVELOPMENT CONCEPTS IN HEIs IN ANOTHER EUROPEAN COUNTRY, BELGIUM (LAMBRECHTS ET AL., 2013) HAS SIMILARLY HIGHLIGHTED THE NEED FOR EDUCATIONAL PROGRAMS THAT PROMOTE COMPETENCES FOR SYSTEMS THINKING, SYSTEMS ORIENTATION AND PERSONAL ACTION ON SUSTAINABLE DEVELOPMENT; HENCE FURTHER UNDERLINING THE IMPORTANCE OF REVISING HEI CURRICULA TO ADDRESS SUSTAINABLE DEVELOPMENT COMPETENCES FOR EMPOWERING YOUNG PEOPLE TO MANAGE A SUSTAINABILITY-ORIENTED FUTURE WORKPLACE.

CONCLUSION

IN THIS STUDY, THE PARTICIPANTS’ DISCUSSIONS REVEALED IMPORTANT INSIGHTS REGARDING THE EXTENT TO WHICH THEIR CURRENT EDUCATION AND LEARNING IS EQUIPPING THEM WITH THE NECESSARY WORLDVIEWS, SKILLS AND COMPETENCIES FOR A SUSTAINABILITY-ORIENTED SOCIETY AND JOB MARKET. SEVERAL PARTICIPANTS CRITICIZED THE LOW PRIORITY GIVEN TO CLIMATE CHANGE AND SUSTAINABILITY EDUCATION IN THEIR CURRENT INSTITUTIONAL PROGRAMME COURSES, AND THAT THIS IMPEDED THEIR ABILITY TO DEVELOP SKILLS THEY CONSIDER NEEDED FOR FUTURE EMPLOYMENT AND SOCIAL COHESION. THE PARTICIPANTS’ PERCEPTIONS OF THE VALUE AND OPPORTUNITY FOR PERSONAL AND PROFESSIONAL DEVELOPMENT THROUGH THEIR JOB AND OF THEIR AGENCY TO INFLUENCE THE CHANGES THEY ENVISION MIGHT BE DIMINISHED IN THE ABSENCE OF ADEQUATE EDUCATION AND TRAINING TO ENHANCE THEIR EMPLOYABILITY AND PERFORMANCE. THE STUDY THUS HIGHLIGHTS THE NEED FOR EDUCATIONAL PROGRAMMES TO ENHANCE YOUNG PEOPLE’S CRITICAL AND REFLECTIVE THINKING, HOLISTIC WORLDVIEWS AND COLLABORATIONS WITH STAKEHOLDERS ACROSS DIFFERENT DISCIPLINES.

FUTURE RESEARCH SHOULD EXPLORE THE DYNAMICS AND POSSIBILITIES FOR THE POLITICAL, ECONOMIC, AND ENVIRONMENTAL TRANSFORMATION OF YOUNG PEOPLE AND YOUTH EMPLOYMENT WITHIN THE CURRENT COMPLEXITY OF POST-2015 DEVELOPMENT DEBATES, THE GLOBAL ECONOMIC RECESSION, RISING CHALLENGES FROM CLIMATE CHANGE, AND THE PRESSING NEED FOR A TRANSITION TO ENERGY EFFICIENT AND A SUSTAINABLE ECONOMY. KEY RESEARCH QUESTIONS NEED TO ADDRESS THE COMPETITIVENESS AND LEADERSHIP POTENTIAL OF YOUNG PEOPLE TO PARTICIPATE IN DECISION-MAKING ON SUSTAINABILITY ISSUES; THE WAYS IN WHICH CHANGING ENVIRONMENTAL CIRCUMSTANCES AFFECT THE WORKING CONDITIONS OF YOUNG WORKERS; WHETHER JOB CREATION IN EMERGING SECTORS CAN ADDRESS THE RISING PROBLEM OF YOUTH UNEMPLOYMENT; WHETHER STUDENTS ACROSS DIVERSE SECTORS AND DISCIPLINES HAVE ADEQUATE SKILLS TO ADAPT AND TRANSFORM A TRANSFORMING LIFESTYLE AND WORKING ENVIRONMENT, AND WHETHER GENDER EQUALITY IS BEING CONSIDERED AND ADDRESSED IN POLICY CONSULTATIONS AND THE TRANSITION TO GREEN JOBS (ILO, 2012; STEVENS, 2009). ANSWERING THESE QUESTIONS REQUIRES MULTIDISCIPLINARY AND SYSTEMATIC STUDIES USING QUANTITATIVE AND QUALITATIVE TOOLS AND ACROSS DIFFERENT COUNTRIES AND YOUTH POPULATIONS.

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VERTEBRATE SPECIES POPULATION ACROSS THE WORLD, AS DEMONSTRATED BY CHANGE LIVING PLANET INDEX (LPI). THE LPI FOR VERTEBRATES REFERS TO THE PERCENTAGE OF VERTEBRATE SPECIES POPULATION THAT HAVE DECREASED SINCE 1970 TO THE YEAR REPORT. THE LPI FOR VERTEBRATES RISEN FROM 28% IN 1970 TO 52% BY 2010. THIS MEANS A HUGE REDUCTION OF MORE THAN 50% IN VERTEBRATE SPECIES BIODIVERSITY IN THE PAST 42 YEARS. HUMANS ALSO PLACE AN EXCESSIVELY HIGH DEMAND ON THE EARTH'S RESOURCES BEYOND THE CAPACITY OF THE EARTH TODAY. THIS IS MEASURED BY THE GLOBAL ECOLOGICAL FOOTPRINT, THAT CONTINUES TO INCREASE AND IS ESTIMATED TO BE 1.5 EARTHS IN 2010. THIS IS THE SIZE OF THE EARTH THAT IS REQUIRED TO PROVIDE THE AMOUNT OF NATURAL RESOURCES NECESSARY TO SATISFY CURRENT HUMAN CONSUMPTION (WWF, 2012; WWF, 2014). WITH THE CURRENT ALARMING RATE OF HUMAN CONSUMPTION OF NATURAL RESOURCES, IT IS DIFFICULT TO BE CERTAIN THAT THE GENERATIONS OF THE FUTURE WILL HAVE ADEQUATE ACCESS TO NATURAL RESOURCES. DEVELOPMENT IS DEEMED TO BE SUSTAINABLE BY GIVING DUE ATTENTION TO THE ECONOMIC, SOCIAL AND ENVIRONMENTAL DIMENSIONS. HOWEVER, ECONOMIC DEVELOPMENT SEEMS TO BE THE MAIN FOCUS, TO THE DETRIMENT OF THE ENVIRONMENT (WWF, 2014). SINCE THE ECONOMIC AND SOCIAL DOMAINS DEPEND ON THE ECOLOGICAL SYSTEMS OF THE WORLD,

LOCAL ECOLOGICAL KNOWLEDGE (LEK) HAS BEEN DESCRIBED AS THE KNOWLEDGE, PRACTICES AND BELIEFS THAT A PERSON HAS ABOUT LOCAL ECOLOGICAL RELATIONSHIPS. LEK IS A SPECIAL KNOWLEDGE WITHIN A COMMUNITY AND IS ACQUIRED AS A RESULT OF THE EXPERIENCES AND OBSERVATIONS MADE BY AN INDIVIDUAL ABOUT LOCAL ECOSYSTEMS. WHEN THIS KNOWLEDGE IS HANDED DOWN THROUGH GENERATIONS AND THEN ADDED TO THE NEW KNOWLEDGE ACQUIRED BY SUBSEQUENT GENERATIONS, IT IS KNOWN AS TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK) (CHAMLEY, FISCHER AND JONES, 2008; GILCHRIST, MALLORY AND MERKEL, 2005).

LEK HELD BY YOUNG PEOPLE IS IMPORTANT AS THEY WILL INHERIT THE EARTH OF TOMORROW. HOWEVER, CHANGING ECONOMIES IN DEVELOPING COUNTRIES HAVE DIVERTED YOUNG PEOPLE AWAY FROM THEIR TRADITIONAL HOMES TO MORE URBAN AREAS FOR EDUCATION AND WORK. IN DEVELOPING COUNTRIES, URBANISATION HAS ALSO CAUSED CHANGES IN THE LIVELIHOODS OF RESIDENTS AS THEY MOVE AWAY FROM THE NATURAL RESOURCE BASED LIFESTYLE THEY USED TO FOLLOW. IN DOING SO, THERE IS A DECLINE IN THE LEK THEY HOLD, AS THEIR NEW LIVELIHOODS ARE NO LONGER BASED ON THE NATURAL RESOURCES AROUND THEM (PUNCH AND SUGDEN, 2005). IN RURAL AREAS, PEOPLE IN RURAL AREAS ARE ABLE TO IDENTIFY MORE ECOSYSTEM SERVICES AS THEIR LIVELIHOODS ARE CLOSELY INTERRELATED WITH THE ENVIRONMENT (MARRAS, 2012). THE RURAL PEOPLE IN THIS STUDY WERE MOSTLY FROM THE OLDER GENERATION, WHILE THE YOUNGER GENERATION TEND TO BE LOCATED IN THE URBAN AREAS. THESE YOUNG PEOPLE TEND TO HAVE A PERCEPTION OF THE NATURAL ENVIRONMENT BASED ON WHAT THEY LEARN IN SCHOOLS AND INSTITUTIONS. A STUDY OF YOUNG PEOPLE IN AUSTRALIA REVEALED THAT THOSE

Ecological literacy

THERE ARE DIFFERENT BUT RELATED APPROACHES TO ECOLOGICAL LITERACY. AN EXTENSIVE REVIEW BY MCBRIDE ET AL. (2013) SUGGESTED THAT ECOLOGICAL LITERACY CAN BE DESCRIBED IN TERMS OF A FRAMEWORK THAT ENCOMPASSES THREE COMPONENTS: ECOLOGICAL KNOWLEDGE, COGNITIVE SKILLS AND SYSTEMS THINKING. ECOLOGICAL KNOWLEDGE REFERS TO A KNOWLEDGE OF ECOLOGY, SOCIO-POLITICS AND ENVIRONMENTAL ISSUES. COGNITIVE SKILLS ARE THOSE SKILLS NECESSARY IN ECOLOGICAL LITERACY AND ENCOMPASSES SCIENTIFIC ENQUIRY. SYSTEMS THINKING AS A COMPONENT OF ECOLOGICAL LITERACY INVOLVES UNDERSTANDING THE WORKINGS OF AN ECOSYSTEM, THE DYNAMICS WITHIN AN ECOSYSTEM AND THE INTERRELATIONS BETWEEN THE BIO-PHYSICAL AND SOCIAL COMPONENTS OF PARTICULAR ENVIRONMENTAL SITUATIONS. IN SOME CASES, ECOLOGICAL LITERACY REFERS ONLY TO ECOLOGICAL KNOWLEDGE.

ECOLOGICAL LITERACY IS FOUND TO BE LOW AMONG MANY SECTIONS OF SOCIETY, FROM PRIMARY SCHOOL CHILDREN (CUTTER-MACKENZIE AND SMITH, 2003) TO ADULT TEACHERS. HASHIM, MARTELL, MCNEILL AND HOFFMAN (2011) ALSO REPORTED BELOW AVERAGE ECOLOGICAL LITERACY AMONG URBAN YOUTH. HOWEVER A HIGH LEVEL OF ECOLOGICAL LITERACY IS NECESSARY FOR PEOPLE TO MAKE INFORMED DECISIONS THAT DO NOT ENDANGER THE ENVIRONMENT. ECOLOGICAL LITERACY IS A KEY CONCEPT THAT NECESSITATES A CHANGE OF WORLDVIEWS. IN VIEW OF THIS, EDUCATION AT ALL LEVELS SHOULD INTEGRATE ECOLOGICAL CONSCIOUSNESS INTO THE CURRICULAR AGENDA (HAMPSON, 2012). POWERS (2010) RECOMMENDS THAT YOUNG PEOPLE SHOULD BE TAUGHT ECOLOGICAL LITERACY SO THAT THEY CAN BE EQUIPPED WITH THE NECESSARY SKILLS AND KNOWLEDGE WHEN DEALING WITH ENVIRONMENTAL ISSUES. IN MALAYSIA ECOLOGICAL CONSCIOUSNESS AND ECOLOGICAL LITERACY IS INCORPORATED INTO ENVIRONMENTAL EDUCATION INITIATIVES, THE MAIN PATHWAY TO RAISING ENVIRONMENTAL AWARENESS (UNESCO, 2000). SOME INITIATIVES ARE CARRIED OUT IN INFORMAL SETTINGS SUCH AS MUSEUMS (NG, 2008), NATURE PARKS (SABAH WETLANDS CONSERVATION SOCIETY, 2012; YUSOFF, 2008) AND NON-GOVERNMENTAL ORGANISATIONS (SINGH AND RAHMAN, 2008, SABAH WETLANDS CONSERVATION SOCIETY, 2012). ENVIRONMENTAL EDUCATION HAS ALSO BEEN IMPLEMENTED IN FORMAL SETTINGS SUCH AS SCHOOLS. ALTHOUGH LABELLED AS ENVIRONMENTAL EDUCATION, ASPECTS OF ECOLOGICAL EDUCATION ARE EMBEDDED IN THE INITIATIVES (KAMIDIN ET AL., 2008).

Ecological thinking

ECOLOGY AS A SCIENCE IS EVOLVING AND UNDERGOING SEVERAL CHANGES IN EMPHASIS AND PERSPECTIVE (WALLINGTON ET AL., 2005). A STUDY ON THE ECOLOGICAL THINKING AMONG ENVIRONMENTAL LOGICISTS BY MOORE ET AL. (2009) REVEALED A DIVERSITY OF VIEWS AND APPROACHES. GENERALLY, THERE WAS WIDESPREAD AGREEMENT ON ECOSYSTEMS BEING IN NON-EQUILIBRIUM. THEY ALSO AGREED THAT THERE ARE MULTIPLE ORGANISATIONAL LEVELS AND THE ROLE OF FUNCTIONAL DIVERSITY IN CHANGES TO THE ENVIRONMENT. HOWEVER THERE WERE DISAGREEMENTS A

NATURE, BUT REMAINS DYNAMIC AS LOCAL COMMUNITIES ADAPT TO ENVIRONMENTAL CHANGE. EXTRACTING LEK FROM THESE COMMUNITIES IS VALUABLE IN CONSERVATION.

TRANSFERRING LEK TO THE YOUNGER GENERATION IS AN IMPORTANT CONSERVATION ACTION THAT CAN HELP IMPROVE KNOWLEDGE OF LOCAL ECOSYSTEMS, THEIR FUNCTIONS AND LOCAL RESOURCES THAT USE THESE RESOURCES AND AT THE SAME TIME HELP PROTECT AND PRESERVE THEM. MANY OF TODAY'S YOUNG PEOPLE HAVE LIMITED OR NO KNOWLEDGE OF LEK FOR VARIOUS REASONS. DEVELOPMENT, URBANISATION AND MODERNISATION HAS CAUSED A DIMINISHING OF LEK. THIS IS FURTHER EXACERBATED BY THE PASSING AWAY OF OLDER GENERATIONS WHO DO NOT HOLD THIS LEK NOT BEING REPLACED BY A YOUNGER GENERATION THAT HAS THIS KNOWLEDGE. A STUDY BY PILGRIM ET AL. (2008) ACROSS THREE COUNTRIES INDICATED THAT LEK IS HIGHER IN LOWER INCOME COMMUNITIES COMPARED TO THEIR WEALTHIER COUNTERPARTS. AS THE ECONOMIC STATUS OF COMMUNITIES IMPROVE, THEY BECOME LESS RELIANT ON LOCAL RESOURCES. THUS LEK BECOMES CONCENTRATED AMONG THOSE WITH PERSONAL INTEREST DUE TO A RESOURCE DEPENDENT CAREER, LIFESTYLE OR STUDY FIELD. THE LOSS OF LEK IS ALSO FOUND TO BE FASTER IN MORE ECONOMICALLY ENDOWED COMMUNITIES. WITH HIGHER INCOMES, COMMUNITIES HAVE GREATER ACCESS TO, AND DEPENDENCY ON, COMMODITIES AVAILABLE IN GLOBAL MARKETS. THEY ARE LESS RELIANT ON LOCAL RESOURCES, THUS HAVE LESS NEED TO ACCESS THEM FOR THEIR SURVIVAL. THIS ALSO LEADS TO REDUCED SHARING OF LEK BETWEEN THE OLDER AND YOUNGER GENERATION. PILGRIM ET AL. (2008) RAISED CONCERNS ABOUT THE THREAT TO LEK DUE TO IMPROVED ECONOMIC GROWTH ACROSS THE GLOBE, LEADING TO THE DECLINING CAPABILITY OF LOCAL COMMUNITIES IN THE MANAGEMENT OF THE ALSO DIMINISHING ENVIRONMENTAL RESOURCES IN THEIR LOCALITY.

INTEGRATING LOCAL KNOWLEDGE IN ECOLOGICAL EDUCATION

AN ECOLOGICAL EDUCATION PROJECT WAS CARRIED OUT IN TWO SCHOOLS LOCATED IN DIFFERENT URBAN AREAS IN MALAYSIA. PARTICIPATION IN THIS PROJECT WAS INITIATED AT THE SCHOOLS, AS PART OF THEIR GREEN SCHOOL ACTIVITIES AND THEIR COLLABORATION WITH HIGHER EDUCATION INSTITUTIONS. THE SCHOOL ADMINISTRATION APPROACHED THE RESEARCHER AND AFTER DISCUSSION, BOTH PARTIES AGREED ON THE PROJECT. THE RESEARCHER INCORPORATED IN THIS PROJECT UTILISED THE QUASI-EXPERIMENTAL METHOD APPLYING ONE SAMPLE NON-EQUIVALENT GROUP DESIGN TECHNIQUE. A PRE-TEST AND A POST-TEST WERE CONDUCTED TO COLLECT DATA ON STUDENTS' ECOLOGICAL LITERACY AND ECOLOGICAL THINKING USING A QUESTIONNAIRE ADAPTED BY THE RESEARCH TEAM. THE QUESTIONNAIRE CONSISTED OF A SECTION ON DEMOGRAPHY, AND SECTIONS ON ECOLOGICAL LITERACY AND ECOLOGICAL THINKING CONSISTING OF FIVE POINT LIKERT SCALE ITEMS. INTERVIEWS THAT FOCUSED ON LOCAL KNOWLEDGE WERE ALSO HELD AT THE END OF THE PROJECT. AFTER THE ADMINISTRATION



Image 1. Students showing the plants in their plot



Image 2. The jam garden



Image 3. The Chinese herb garden and skin care garden

THE INTERNET, THEY ALSO INTERVIEWED PEOPLE IN THEIR COMMUNITY WHO HAD KNOWLEDGE ABOUT THESE LOCAL PLANTS, PARTICULARLY THE OLDER GENERATION. THEY ALSO GATHERED INFORMATION FROM THEIR RESPONDENTS ABOUT THE BENEFITS AND USE OF THESE PLANTS BY THE LOCAL PEOPLE.

ECOLOGICAL EDUCATION, LOCAL KNOWLEDGE AND CHANGES IN STUDENTS' ECOLOGICAL LITERACY AND ECOLOGICAL THINKING.

AS SHOWN IN TABLE 1, STUDENTS' ECOLOGICAL LITERACY AND ECOLOGICAL THINKING WERE ABOVE 80 PERCENT OF THE TOTAL SCORE FOR EACH CATEGORY BEFORE THE START OF THE ECOLOGICAL EDUCATION ACTIVITY. HOWEVER, PARTICIPATION IN THE ECOLOGICAL EDUCATION ACTIVITY SHOWED IMPROVED RESULTS. THERE WAS A 5.7% INCREASE IN THE MEAN SCORE FOR ECOLOGICAL LITERACY AND A 5.6% INCREASE IN THE MEAN SCORE FOR ECOLOGICAL THINKING AFTER THE PROJECT. THE GAINS IN ECOLOGICAL LITERACY AND ECOLOGICAL THINKING ARE STATISTICALLY SIGNIFICANT, AT THE $p < .05$ LEVEL WITH AN EFFECT SIZE OF 0.28 AND 0.22 RESPECTIVELY. IT CAN BE INFERRED THAT THE STUDENTS' EXPERIENCE IN THE ECOLOGICAL EDUCATION ACTIVITY HAS CONTRIBUTED TO THEIR IMPROVED ECOLOGICAL LITERACY BY 28 PERCENT, AND THEIR ECOLOGICAL THINKING BY 22 PERCENT.

| <i>Item</i> | <i>Test</i> | <i>N</i> | <i>Mean</i> | <i>Total score</i> | <i>Mean as % of total score</i> | <i>Std. Deviation</i> | <i>t</i> | <i>p</i> | η^2 |
|----------------------------|------------------|----------|-------------|--------------------|---------------------------------|-----------------------|----------|----------|----------|
| Ecological Literacy | <i>pre-test</i> | 108 | 184.47 | 240 | 76.86 | 10.61 | -9.15 | .01 | 0.28 |
| | <i>post-test</i> | 107 | 198.07 | | 82.53 | 11.17 | | | |
| Ecological thinking | <i>pre-test</i> | 108 | 90.81 | 120 | 75.68 | 6.56 | -7.76 | .01 | 0.22 |
| | <i>post-test</i> | 107 | 97.54 | | 81.28 | 6.15 | | | |

Table 1 Changes in students' ecological literacy and ecological thinking

A CLOSER LOOK AT A FEW OF THE QUESTIONNAIRE ITEMS SHOW THE NATURE OF THESE ITEMS. TABLE 2 AND TABLE 3 LIST SELECTED ITEMS FOR ECOLOGICAL LITERACY AND ECOLOGICAL THINKING RESPECTIVELY.

THE STUDENTS ON SITE. STUDENTS EXPLAINED THE THEME THEY HAD CHOSEN AND THE PLANTS THEY GREW. IN THE SECOND PHASE, THE STUDENTS TALKED ABOUT THEIR PROJECT AS A VISITORS TO THE COMPOST HEAP. THIS WAS CONDUCTED IN THE SCHOOL BUILDING. BEFORE THE START OF THE PROGRAMM, FEW OF THE STUDENTS COULD NAME THE PLANTS AND ANIMALS THAT THEY SAW AROUND THE GARDEN. THIS WAS ALSO TRUE FOR OTHER ORGANISMS THAT WERE PRESENT IN THEIR ENVIRONMENT. THEREFORE BEFORE THE PROJECT THEY DID NOT KNOW MUCH ABOUT THE LOCAL PLANTS AND ANIMALS, THEM OR THEIR ECOLOGY. FOR EXAMPLE, MANY OF THEM DID NOT NOTICE THAT CERTAIN INSECTS FREQUENTED THE SCHOOL YARD OR THEIR HOMES. IN TERMS OF ECOLOGICAL LITERACY, THE PROJECT HAS ENCOURAGED STUDENTS TO BE KEENER OBSERVERS OF WHAT TAKES PLACE IN THEIR GARDEN AND TO IDENTIFY VISITORS TO THEIR GARDEN. AS THEY PROGRESSED WITH THE ACTIVITY, IN THIS PROJECT, THEY BEGAN TO MAKE A GREATER NOTE OF THE BIODIVERSITY. THEY COULDN'T REALIZE THAT CERTAIN INSECTS VISITED THE PLANTS THEY GREW, AND WENT ON TO INVESTIGATE THE ROLE OF THESE INSECTS IN THEIR GARDEN PLOTS. THEY BECAME MORE AWARE OF THE INSECTS THAT FREQUENT THE PLANTS THEY GROW, AND WENT ON TO DISCOVER WHETHER THESE INSECTS WERE BENEFICIAL OR DETRIMENTAL TO THEIR PLANTS. THEY MADE SIMILAR INVESTIGATIONS INTO THE ROLE OF OTHER ANIMALS AND NEW PLANTS THAT APPEARED AMONG THEIR PLANTS. THEY ALSO IDENTIFIED OTHER INVERTEBRATES AND BIRDS THEY SAW IN THEIR GARDEN AND SCHOOL GROUNDS. TO SUPPORT THEIR OBSERVATIONS, THEY INCLUDED PHOTOGRAPHS OF THE BIRDS IN THEIR PROJECT REPORTS. FEW EVEN REPORTED THAT THEY HAD CIVETS AS VISITORS AND SHOWED THE OBJECTS THEY CLAIMED TO BE THE CIVET DROPPINGS. STUDENTS BECAME MORE AWARE OF THE ROLE OF INSECTS AND OTHER ORGANISMS AND THE INTERRELATIONSHIPS BETWEEN THEM.



Image 6. Visitors to the compost heap

LEMONGRASS IS ALSO A PLANT COMMONLY USED IN THE DAILY COOKING BY LOCALS AND BROTH PRODUCED FROM THIS PLANT IS USED TO RELIEVE STOMACH PAINS. ANOTHER LOCAL CITRONELLA, IS USED AS AN INSECT REPELLANT.

CONCLUSION

LOCAL ECOLOGICAL KNOWLEDGE WILL SOON DISAPPEAR IF THERE IS NO CONCERTED EFFORT TO PRESERVE AND ENSURE ITS CONTINUED EXISTENCE. MODERNISATION AND DEVELOPMENT, ALTHOUGH BENEFICIAL FOR HUMAN PROGRESS, CAN ERODE LEK. AS MORE OF THE OLDER GENERATION PASS ON THERE IS A REDUCED INTER-GENERATIONAL TRANSFER OF LEK AND THEREFORE ECOLOGICAL EDUCATION BECOMES AN IMPORTANT TOOL FOR THE CONSERVATION AND PRESERVATION OF LEK. OPPORTUNITIES PROVIDED THROUGH ECOLOGICAL EDUCATION CAN PROVIDE A VALUABLE EXPERIENCE OF GROWING PLANTS AND CARING FOR THEM. OBSERVING WHAT HAPPENS IN A GARDEN INCLUDING THE UNINTENDED GROWTH OF OTHER PLANTS, VISITATIONS BY ANIMALS AND STUDYING THESE ORGANISMS CAN HELP IN IMPROVING ECOLOGICAL LITERACY AND ECOLOGICAL THINKING.

ONCE THE STUDENTS IN THE PROJECT LOOKED AT GARDENS AND PLANTS, AND SAW THEM IN THE CONTEXT OF THE LANDSCAPE, THEY THEN BEGAN TO SEE THAT A PLANT IS A THRIVING ORGANISM AND ITS INTERACTIONS WITH OTHER ORGANISMS. AS A RESULT THEY THEN BEGAN TO KNOW MORE ABOUT THESE ORGANISMS THROUGH THE STUDY REQUIRED OF THEM IN THE PROJECT.

KNOWLEDGE OF THE LIVING COMPONENTS IN THE GARDEN INCLUDE THE INTERRELATIONSHIPS THAT OCCUR BETWEEN THEM. STUDENTS WILL SEE THAT ANY HUMAN ACTION CAN CAUSE CHANGES IN THESE RELATIONSHIPS AND AS A RESULT BEGIN TO DEVELOP THEIR ECOLOGICAL THINKING. CHOOSING PARTICULAR THEMES FOR THEIR GARDENS ENCOURAGED STUDENTS TO GIVE MORE ATTENTION TO THE PLANTS THAT THEY USE IN THEIR OWN LIVES. TASKING STUDENTS TO SELECT LOCAL THEMES AND LOCAL PLANTS HELPED STUDENTS TO BECOME MORE AWARE OF THE LOCAL BIODIVERSITY, AND TO LEARN MORE ABOUT THE LOCAL ECOLOGICAL KNOWLEDGE OF THEIR COMMUNITY. IN CARRYING OUT THIS TASK THEIR INTERACTIONS WITH OTHER MEMBERS OF THEIR FAMILY AND COMMUNITY BROUGHT THEM CLOSER TO LOCAL BIODIVERSITY, GAINING KNOWLEDGE IN THE PROCESS. THEY BEGAN TO APPRECIATE LOCAL FLORA AND FAUNA, AND UNDERSTAND THE IMPORTANCE OF CONSERVING LOCAL BIODIVERSITY. ALTHOUGH MOST STUDENTS LIVE IN URBAN AREAS, LOCAL NATURAL RESOURCES ARE STILL VALUED BY THESE COMMUNITIES, FOR EXAMPLE AS PART OF THE COMPONENTS OF THEIR FOOD SYSTEM. INTEGRATING LEK INTO ECOLOGICAL EDUCATION CAN HELP TO EDUCATE YOUNG PEOPLE ABOUT LOCAL BIODIVERSITY. THE AIM IS THAT THE REAL EXPERIENCE THEY GAINED FROM THE PROJECT WILL INFLUENCE THEIR FUTURE ACTION TOWARDS SUSTAINABILITY.

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REFLECTIONS ON ‘COMMITTED’ RESEARCH INTO EDUCATION FOR SUSTAINABLE DEVELOPMENT: CHALLENGES AND RESPONSES

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AbSTRACT

THIS CHAPTER PRESENTS CRITICAL REFLECTIONS ON ‘COMMITTED’ RESEARCH INTO EDUCATION FOR SUSTAINABLE DEVELOPMENT. THE CONCEPT OF EDUCATION FOR SUSTAINABLE DEVELOPMENT HAS IMPLICATIONS FOR THE DELIVERY AND CONTENT OF EDUCATION AND FOR THE PRACTICE OF RESEARCH INTO SUSTAINABLE DEVELOPMENT. THIS IN TURN HAS CONSEQUENCES FOR THEORY AND METHODOLOGY AND FOR THE COMPLEX RELATIONSHIP BETWEEN PEDAGOGY AND PRACTICE. DRAWING UPON INSIGHTS FROM A WORKSHOP INVOLVING TEACHING, RESEARCH AND COMMUNITY DEVELOPMENT PRACTITIONERS THE CHAPTER ARGUES THAT, WHILE EDUCATION FOR SUSTAINABLE DEVELOPMENT AS A CONCEPT CROSSES ALL THESE BOUNDARIES, THERE IS A PRACTICAL DISCONNECTION THAT CAN ONLY BE ADDRESSED THROUGH PROBLEM ACTION-ORIENTED AND COLLABORATIVE APPROACHES. IT CONCLUDES THAT THESE APPROACHES ARE UNDERPINNED BY THE IDENTIFICATION, DEVELOPMENT AND ASSIMILATION OF THE TRANS-DISCIPLINARY ATTRIBUTES THAT FACILITATE MOVING ACROSS, AS WELL AS BETWEEN, DISCIPLINARY ROLES AND CONTEXTS.

KEYWORDS

EDUCATION FOR SUSTAINABLE DEVELOPMENT, HIGHER EDUCATION, RESEARCH, TRANSDISCIPLINARITY

INTRODUCTION

SOCIETY TODAY IS FACING MAJOR SUSTAINABILITY CHALLENGES, CHARACTERISED BY COMPLEXITY AND RELUCTANCE TO SUCCUMB TO CLEARLY BOUNDED DEFINITIONS AND SOLUTIONS BASED UPON ‘HARD’ EVIDENCE (FUNTOWICZ AND RAVETZ, 2003; LEMON ET AL., 2012; RIECKMANN, 2012; RITTEL AND WEBER, 1973). AS KEY ACTORS IN THE NARRATIVE

THESE UNDERLYING CHALLENGES FACING RESEARCHERS, TEACHERS AND PRACTITIONERS IN ESD RELATED ISSUES ARE INVARIABLY THE UNPREDICTABLE PRODUCT OF CONTINUALLY CHANGING SOCIAL, TECHNICAL, ECONOMIC AND ECOLOGICAL INTERACTIONS. ONE RESPONSE TO AN INTERPRETATION WOULD BE TO ADOPT A FATALISTIC STANCE WHEREBY WE ARE RELUCTANT TO INTERVENE, BECAUSE NOTHING CAN BE PREDICTED WITH ANY DEGREE OF CERTAINTY. ALTERNATIVELY WE CAN ASSUME THE REDUCTIONIST PARADIGM WHEREBY WE FOCUS UPON A SPECIFIC PART OF A PROBLEM AND ASSUME THAT 'EVERYTHING ELSE IS EQUAL'. WHILE NEITHER FATALISM OR REDUCTIONISM ARE PARTICULARLY HELPFUL WITH HOW WE RESEARCH 'REAL WORLD' SYSTEMS, IT IS POSSIBLE TO IDENTIFY A NUMBER OF FEATURES OF COMPLEX SYSTEMS THAT MIGHT SUPPORT A 'REPLICABLE' FRAMEWORK OR APPROACH TO UNDERSTANDING THEM; IN OTHER WORDS, IS IT POSSIBLE TO UNDERSTAND COMPLEX SYSTEMS SYSTEMATICALLY? TO DO THIS THERE IS A NEED TO ACKNOWLEDGE COMPLEXITY AND MAP THE SYSTEM OUT AS A WHOLE RATHER THAN TRYING TO SOLVE THE WHOLE PROBLEM (STERLING, 2004).

AN ADDITIONAL KEY CHALLENGE FACING COMMITTED OR APPLIED RESEARCH FOR ESD IS THE DISCONNECT BETWEEN THE RANGE OF KEY ACTORS AND AGENCIES AND THE DISCREPANCY OF OFTEN POORLY INTEGRATED ROLES THAT THEY PERFORM. EVEN WHEN ACADEMICS, COMMUNIST STUDENTS, COMMUNITY REPRESENTATIVES, COMPANIES AND OTHER STAKEHOLDERS COME TOGETHER TO A COMMON VISION ABOUT THE FUTURE, THE SPECIFIC RESPONSIBILITIES AND RESTRICTIONS OF THEIR ROLES CAN MITIGATE AGAINST AN ADAPTIVE TRANSITION THAT DRAWS UPON THEM. TO GENERATES, SOCIAL LEARNING (SAJEVA ET AL., 2015). ACADEMIC RESEARCHERS HAVE TO SECURE AND GENERATE FUNDING, TEACHERS HAVE TO MEET CURRICULA CRITERIA AND ENSURE THAT THEIR RESULTS ARE ACCEPTABLE AND DEVELOPMENT PRACTITIONERS HAVE TO ENSURE THAT OBJECTIVES ARE SPECIFIED AND MET EVEN IF THE CONTEXT HAS CHANGED TO MAKE THOSE TARGETS NO LONGER RELEVANT. INDEED THE LATTER CHALLENGE IS GENERIC. WHERE TARGETS ARE SET IN PLACE, WHETHER THEY BE FOR PUBLICATION, EXAM RESULTS OR COMMUNITY ENGAGEMENT, THE TARGETS THEMSELVES BECOME THE FOCUS OF ATTENTION AND NOT THE REASON FOR THE INSTALLATION. PUBLICATION QUANTITY CAN OVERTAKE QUALITY; PASSING EXAMS SUPERSEDING THE QUALITY OF LEARNING AND NUMBERS AT A COMMUNITY EVENT BE MORE IMPORTANT THAN SUSTAINABLE ENGAGEMENT. WHERE TARGETS ARE INTRODUCED AND ARE LINKED TO SOME FORM OF PENALTY THEY CAN UNDERMINE THE FLEXIBILITY THAT IS NECESSARY TO RESPOND TO THE REASONS THEY WERE INTRODUCED (LEMON ET AL., 2010). WITHIN THE CONTEXT OF MULTIPLE ACTORS AND THEIR RESPECTIVE ROLES AND TARGETS IT IS POSSIBLE TO IDENTIFY A NUMBER OF OTHER FACTORS THAT MAKE AN INTEGRATIVE RESEARCH APPROACH TO ESD MORE PROBLEMATIC. THESE ISSUES ARE INTRODUCED IN THE FOLLOWING SECTIONS.

LINKS HOUSEHOLD DECISIONS ABOUT TRANSPORT TO MORE ENERGY EFFICIENT VEHICLE STRATEGIES OF MULTINATIONAL AUTOMOTIVE ORGANISATIONS AND CLIMATE CHANGE. THIS OBVIOUSLY INFLUENCES HOW WE UNDERSTAND AND COMMUNICATE THE ISSUE OF SUSTAINABILITY (E.G. SEE RIVOLI'S EXAMPLE OF A T-SHIRT, 2009). PRACTICAL ISSUES OF TIME AND PLACE ARE ALSO IMPORTANT IN THE 'ACT' OF ESD RESEARCH. THE TIME REQUIRED TO EXPLORE A SUSTAINABILITY RELATED ISSUE CAN BE IN EXCESS OF THAT WHICH IS AVAILABLE FOR ANY SPECIFIC, AND TIMETABLED, SUBJECT OR RESEARCH PROJECT. THE DEVELOPMENT OF CROSS-CURRICULAR, ISSUE FOCUSED, MATERIAL IS NOT ONLY TIME CONSUMING IN ITSELF, IT MAY REQUIRE SIGNIFICANT INVESTMENT IN DEVELOPING NEW RELATIONSHIPS AND FORMS OF DELIVERY AMONG THE TEACHING STAFF. AS DISCUSSED IN THE INTRODUCTION, THIS INVESTMENT MAY RUN CONTRARY TO THE MEASURES BY WHICH TEACHERS ARE JUDGED. FOR RESEARCHERS AND PRACTITIONERS SIMILAR TEMPORAL CONSTRAINTS CAN EMERGE. WITH THE FORMER, TIME MAY MANIFEST THEMSELVES THROUGH THE TIME REQUIRED TO GENERATE CROSS-DISCIPLINARY WORKING RELATIONSHIPS AND TO NEGOTIATE ACCESS TO STAKEHOLDERS, WITH THE LATTER A MORE PRAGMATIC FOCUS ON SPECIFIC OUTCOMES MAY RESTRICT THE TIME AVAILABLE TO EXPLORE NEW APPROACHES WITH RESEARCHERS OR OTHER AREAS OF PRACTICE AND TO UNDERTAKE REFLECTIVE PRACTICE THAT IS FUNDAMENTAL TO THIS EXPLORATION.

OTHER MORE STRUCTURED ASPECTS OF TIME ARE ALSO SIGNIFICANT CONSTRAINTS THAT NEED TO BE MANAGED; POLITICAL AND FINANCIAL CYCLES, THE SCHOOL TIMETABLE AND WORKING HOURS CAN CONSTRAIN ENGAGEMENT WITH A TOPIC THAT IS ONGOING AND EMERGENT. THE RESPONSE TO SUCH TIME CONSTRAINTS MAY WELL REQUIRE FLEXIBILITY ON THE PART OF THE INDIVIDUALS INVOLVED TO BE INVOLVED OUTSIDE OF THEIR ACCEPTED TIME COMMITMENT; AND ON THE PART OF ORGANISATIONS - TO SUPPORT THEIR PERSONNEL IN THIS MORE FLEXIBLE APPROACH AND POTENTIALLY TO MAKE RESOURCES AVAILABLE FOR THIS, E.G. PREMISES FOR MEETINGS.

ONE FINAL ASPECT OF TIME FOR CONSIDERATION, PARTICULARLY WITHIN ESD, RELATES TO THE TEMPORAL PERSPECTIVE THAT IS ADOPTED; FOCUS ON THE NATURAL ENVIRONMENT AND CLIMATE CHANGE MAY VARIABLY REQUIRE A LONGER TERM PERSPECTIVE THAN ONE ON THE ECONOMIC AND POLITICAL ENVIRONMENT WHICH MAY BE DETERMINED BY THEIR RESPECTIVE SHORT(ER) TERM COMMITMENTS (LEMON AND GREEN, 1996). THE ABILITY TO ENGAGE WITH STAKEHOLDERS AT SPECIFIC TIMES ONLY (E.G. WHEN THE COUNCIL OFFICES ARE OPEN, WHEN THE SCHOOL GOVERNORS ARE IN MEETING OR NOT AT WORK) PROVIDES ONE EXAMPLE OF HOW ACCESS CAN BE SOCIALLY AND PHYSICALLY CONSTRAINED BY TIME.

SOCIAL AND PHYSICAL ACCESS

Workshop discussion:

- *How can researchers access 'local' knowledge?*

AWARENESS BOTH AS THE BASIS FOR ENGAGEMENT (APPROPRIATE DRESS, LANGUAGE AND TO SUPPORT ANALYSIS AND EXPLAIN VARIATION BETWEEN GROUPS. CULTURAL WILL MANIFEST THEMSELVES THROUGH DIFFERENT PERSPECTIVES ON AN ISSUE AND PERSPECTIVES MAY CHANGE AS NEW CONTEXTS ARE FORGED AND EXPERIENCED.

MULTIPLE PERSPECTIVES AND THE PURSUIT OF CONSENSUS

Workshop discussion:

- *We tend to operate in disciplinary silos, but sustainable development is an interdisciplinary issue.*
- *The researcher is a member of the learning community, (s)he needs to understand the context, respect expectations and needs of stakeholders.*
- *Researchers must become familiar with teaching and learning methods that engage the whole community and appreciates the different perspectives.*

ESD CALLS FOR ACTION-ORIENTED AND COLLABORATIVE APPROACHES IN WHICH ALL STAKEHOLDERS CAN BE INVOLVED IN THE RESEARCH PROCESS (ESPINET AND ZACHARIOU, 2014). THIS MEANS THAT THE INVOLVEMENT OF STAKEHOLDERS CAN TAKE DIFFERENT FORMS AND FUNCTION IN A RESEARCH PROCESS: E.G. (1) INFORMING STAKEHOLDERS ABOUT RESEARCH (E.G. IN A MEETING); (2) CONSULT STAKEHOLDERS (E.G. IN A SURVEY); (3) DIALOGUE WITH STAKEHOLDERS (E.G. IN FOCUS GROUPS); (4) STAKEHOLDER PARTICIPATION (E.G. IN ACTION RESEARCH) (LAMBRECHTS ET AL., 2009). IT IS CLEAR THAT THE DIFFERENT FORMS OF STAKEHOLDER INVOLVEMENT INVOLVE DIFFERENT LEVELS OF COMMITMENT AND FORMS OF COLLABORATION AND CAN BE LINKED TO DEFINING AND APPLYING QUALITY CRITERIA (LAMBRECHTS, 2012).

THE CULTURAL CLIMATE IN WHICH BEHAVIOURS TAKE PLACE INVARIABLY MEANS THAT THE PERCEPTION AS IT IS PERCEIVED BY DIFFERENT STAKEHOLDERS DOES NOT COINCIDE WITH THE VIEWS OF POLICY MAKERS, POLITICIANS OR SCIENTISTS FEEL IT SHOULD BE PERCEIVED. OF COURSE DIFFERENT AGENCIES WILL OFTEN HAVE AN INFLUENTIAL PART TO PLAY IN THE CREATION OF THESE PERCEPTIONS. PROBLEMS, AND BY EXTENSION OPTIONS, ARE DEFINED BY THE PERCEPTUAL SPACE WITHIN WHICH INDIVIDUALS AND GROUPS OPERATE AND WHILE THERE ARE LIKELY TO BE VARYING PERCEPTIONS OVER AN ISSUE THOSE PERCEPTIONS ARE ALSO LIKELY TO CHANGE THROUGHOUT SOCIETY THEREFORE REFLECTS, AND PRESENTS, A VARIETY OF DIFFERENT PERSPECTIVES, PRIORITIES, PERCEPTIONS OF EDUCATION AND INTERPRETATIONS OF THE ROLE AND VALUE OF RESEARCH. DIFFERENCES ALSO OCCUR IN THE EXPERIENCES OF, AND RELATIONSHIPS BETWEEN ACTORS RELATING TO A SPECIFIC PHENOMON OR ISSUE (E.G. OF RESEARCHERS WITH STUDENTS AND STAFF, OF STAFF WITH CONTRACTORS, OF COMMUNITY WITH SCHOOL) AND IN THE CHOICE OF LANGUAGE, DEPENDING ON THE CONTEXT AND CREDIBILITY, (TECHNICAL, PEDAGOGIC, CULTURAL, ORGANISATIONAL, ETC). THE LANGUAGE OF THE CLASSROOM DIFFERS GREATLY FROM THE

- *There is a need to involve students and community members in evidence based research (e.g. data gathering).*
- *Avoid research that ‘just takes’ and does not ‘replenish’, add value.*
- *Guidance is necessary for dealing with the tension between doing ‘my research’ and the needs of stakeholders.*
- *Generate confidence within the researcher, training and stakeholder communities that ‘to not have all the answers’ is acceptable.*
- *Give consideration to potential bias and ethics in research.*

THERE WAS A RECOGNITION IN THE WORKSHOP THAT THE ROLE AND IDENTITY OF THE RESEARCHER MIGHT NOT ONLY BE CONFUSING FOR OTHER STAKEHOLDERS BUT FOR THE RESEARCHER THEMSELVES; ARE THEY ACTING AS A MEDIATOR, A MENTOR, A SUPERVISOR, AN OBSERVER, A FACILITATOR, AN OUTSIDER, AN ACTIVIST OR COMBINATIONS OF THESE ROLES? GUIDANCE WAS FELT TO BE NECESSARY IN HOW TO DEAL WITH THIS TENSION BETWEEN DOING ‘MY RESEARCH’ AND THE NEEDS AND PARTICIPATION OF PRACTITIONERS AND COMMUNITY STAKEHOLDERS. MANAGEMENT OF EXPECTATIONS IS PROBLEMATIC WHEN THE RESEARCHER HAS PERSONAL AND INSTITUTIONAL TARGETS AND A ‘RELATIONSHIP’ WITH STAKEHOLDERS. ISSUES OF ETHICS WERE ADDRESSED SYSTEMATICALLY BUT THESE DO NOT NECESSARILY DEAL WITH HOW EXPECTATIONS WERE ADDRESSED. TRUST, CLARITY OF PURPOSE AND RELATIONSHIP BUILDING ARE KEY TO AVOIDING THE PERCEPTION THAT RESEARCHERS “COLLECT DATA AND GO”. IT IS ALSO IMPORTANT THAT RESEARCHERS AND STUDENTS ARE SUPPORTED IN THE ACQUISITION OF RESEARCH SKILLS SO THAT THEY HAVE THE OPTION TO EXPLORE THEMSELVES WHEN APPROPRIATE, THEY ARE NOT RELIANT ON EXPERT RESEARCHERS AND THEY ARE ABLE TO EVALUATE THE QUALITY OF THE RESEARCH THEY ENCOUNTER. WE HAVE HIGHLIGHTED THE NEED TO ADDRESS ISSUES OF SOCIAL ACCESS AND TO RECOGNISE AND DRAW UPON THE MULTIPLE PERSPECTIVES THAT EXIST WITHIN RESEARCH INTO ESD. DIFFERENT TYPES OF THESE REQUIRE DIFFERENT STAKEHOLDERS IN THE ESD PROCESS TO TRUST OTHER PARTIES. ON THE ONE HAND IN TERMS OF PROVIDING AND NOT ABUSING ACCESS AND ON THE OTHER HAND IN RECOGNISING THAT CONSTRUCTIVE DIALOGUE IS ESSENTIAL, PARTICULARLY WHERE THERE ARE CONFLICTING VIEWS. JOHN LOCKE STATED THAT TRUST IS THE BOND OF SOCIETY (HOLLIS, 1998) AND IT COULD BE SUGGESTED THAT IT IS THE KEY TO ADDRESSING THE DISCONNECT BETWEEN RESEARCH INTO ESD.

TRUST IS MULTI-FACETED IN THE WAY IT INFLUENCES OUR ABILITY AND WILLINGNESS TO ENGAGE. NEWELL AND SWAN (2000) SUGGEST THREE TYPES OF TRUST THAT EMERGE WITHIN A RESEARCH PROJECT AND ARE RELEVANT TO ESD. COMPANION TRUST IS BASED UPON CLOSE INTERPERSONAL BONDS AND RELATES TO HIGH LEVEL PRINCIPLES, OR ‘MORAL FOUNDATIONS’. THE ESTABLISHMENT OF COMPANION TRUST IS LIKELY TO BE SLOW, AND WHEN THREATENED OR DESTROYED, CAUSES THE “GREATEST RIFT BETWEEN THE PARTIES INVOLVED” (NEWELL AND SWAN, 2000, P. 1).

DISCIPLINARITY: KNOWLEDGE AND SKILLS FOR RESEARCH INTO ESD

Workshop discussion:

- *How can an ESD researcher be more flexible and adaptive?*
- *Need to consider how to combine collaborative (participatory) action research and traditional research.*
- *Qualitative and quantitative research may also need to be integrated in this process.*
- *Introduce researchers and students to action research and facilitator skills.*
- *There is a need to recognise that sustainable development is a process of social learning.*

ONE CAUSE OF THE DISCONNECT BETWEEN RESEARCH, TEACHING AND PRACTICE OF ESD IS THE BOUNDING OF PROBLEMS BY, AND OFTEN THE LINKING OF JOB DESCRIPTIONS AND OPPORTUNITIES FOR CAREER PROGRESSION, TO SPECIFIC DISCIPLINES. THE DISCIPLINARY APPROACH AND THE ORGANISATIONAL STRUCTURE OF HIGHER EDUCATION INSTITUTIONS (HEIS) ARE OFTEN SEEN AS A BARRIER TO THE INTEGRATIVE PURSUIT OF MORE SD (VERHULST AND LAMBRECHTS, 2015). WITH THE COMPLEXITY OF SD ISSUES POSES ADDITIONAL THEORETICAL AND METHODOLOGICAL CHALLENGES. DISCIPLINARY EXPERTISE IS UNDOUBTEDLY ESSENTIAL FOR ADDRESSING SPECIFIC AND CLEARLY BOUNDED PROBLEMS BUT, AS DISCUSSED ABOVE, THE CLARITY OF THESE BOUNDARIES CAN OFTEN ONLY BE REALISED FOLLOWING A HOLISTIC EXPLORATION OF THE 'MESS' OF THE PROBLEM ISSUE BEING CONSIDERED. ALL THE DIFFERENT APPROACHES TO UNDERSTANDING A PROBLEM ARE PART OF THE BAGGAGE – GOOD DEDUCTIVE SCIENCE OFTEN TELLS US LITTLE ABOUT CONTEXT BUT A GOOD NARRATIVE DOES NOT, AND CANNOT, PROVIDE THEORETICAL CLARITY AND STATISTICAL VALIDITY. FOR EXAMPLE, RESEARCH INTO THE COMMUNITY RESPONSE TO WATER QUALITY NEEDS TO UNDERSTAND BOTH THE CHEMICAL IMPACT OF POLLUTANTS IN A WATERCOURSE AND THE REASONS FOR THEM BEING THERE. THE CHEMISTRY AND INDUSTRIAL PROCESSES OF THE FORMER ARE INEXTRICABLY LINKED TO THE ORGANISATIONAL, ECONOMIC AND CULTURAL INFLUENCES ON THE LATTER. THE CLARITY OF THE WHOLE STORY; TO UNDERSTAND ONE WITHOUT THE OTHER IS OFTEN NOT HELPFUL BUT NECESSARY. GOOD PHYSICAL SCIENCE AND GOOD SOCIAL SCIENCE ARE BOTH IMPORTANT IT IS THE INTEGRATIVE CAPABILITY THAT SHOULD UNDERPIN THE NARRATIVE, COMPLEMENT THE DISCIPLINARY EXPERTISE AND COLLECTIVELY CONTRIBUTE TO A HOLISTIC UNDERSTANDING.

HOWEVER, IT SHOULD BE RECOGNISED THAT THE 'WHOLE' PROBLEM REFERS TO VIEWING THE SYSTEM AS A WHOLE, NOT ATTEMPTING TO SOLVE THE WHOLE PROBLEM. FURTHERMORE, WE DO NOT AND CANNOT KNOW WHAT THE FUTURE HOLDS. SD ISSUES ARE ALWAYS UNRESOLVED. IN TEACHING, RESEARCH AND PRACTICE OPERATE IN AN INCREASINGLY INTERCONNECTED, COMPLEX AND MESSY WORLD. THIS SUMMARISES A NUMBER OF EPISTEMOLOGICAL AND PEDAGOGICAL QUESTIONS ARISING FROM THE PREVIOUS DISCUSSION:

OF NATURAL AND PHYSICAL SCIENCES. WITHIN THE CONTEXT OF ESD THE INSIGHT FROM
TIVE, INTERPRETIVE AND PARTICIPATIVE SOCIAL SCIENCE IS COMPLEMENTARY TO, NOT IN
WITH, THE PHYSICAL AND NATURAL SCIENCES. THIS LEADS INTO AN ADDITIONAL CHA
HIGHLIGHTED IN THE WORKSHOP; HOW TO ENSURE THAT THE RESEARCH HAS IMPACT
IS BECOMING AN INCREASINGLY IMPORTANT COMPONENT OF HIGHER EDUCATION ME
(E.G. WITHIN THE RESEARCH EXCELLENCE FRAMEWORK (REF) IN THE UK) AND ENCO
REVISITING SOME EARLIER WORK IN MANAGEMENT SCIENCE. GIBBONS ET AL. (1994) DIFF
TIATE BETWEEN MODE 1 PROBLEMS WHICH ARE CLEARLY DEFINED AND ADDRESSED THRO
TRADITIONAL, DISCIPLINARY APPROACHES WHILE MODE 2 ARE CONTEXTUAL, APPLI
ACCOUNTABLE, IN OTHER WORDS THEY HAVE THE POTENTIAL FOR IMPACT. ENGAGING
MULTIPLE STAKEHOLDERS IN COMPLEX ESD CONTEXTS, EVEN IF THAT ENGAGEMENT IS PR
PEDAGOGIC RATHER THAN ACTION BASED I.E. THROUGH THE TRANSFER OF PRACTICAL SK
OR COMMUNICATING NEW WAYS OF EXPLORING AN ISSUE, DOES MEAN THAT RESEARCHER
IMPACT BY BEING A PART OF THE PROCESS THEY ARE INVESTIGATING (REASON AND BRAD
2001).

THESE INITIAL CHALLENGES LEAD US DIRECTLY INTO QUESTIONING HOW MULTI- AND TRAN
CIPLINARY STUDIES CAN BE FITTED INTO A DISCIPLINARY BASED HIGHER EDUCATION SYST
BEFORE CONSIDERING THIS IT IS WORTH DIFFERENTIATING MULTIDISCIPLINARY APPROACH
THOSE WHICH OPERATE BETWEEN, AND DRAW UPON, DIFFERENT DISCIPLINES; AND TRANS
CIPLINARY APPROACHES WHICH ESSENTIALLY WORKS ACROSS THE DISCIPLINES (WA
2012). TRANSDISCIPLINARITY, AS INTERPRETED IN THIS CHAPTER, IS COMPLEMENTARY TO
DISCIPLINARITY AND IS CHARACTERISED BY A SET OF SKILLS AND ATTRIBUTES THAT SHOU
MADE AVAILABLE TO ALL STAKEHOLDERS, I.E. TEACHERS, STUDENTS, RESEARCHERS, PRA
AND COMMUNITY PARTICIPANTS. AS IMPACT BECOMES MORE IMPORTANT TO HEI'S IT
POSSIBLE THAT NEW 'ISSUE' ORIENTED RESEARCH STRUCTURES AND CENTRES WILL BE IN
SUCH CENTRES ARE BECOMING MORE COMMON E.G. FOR NATURAL RESOURCE MANAGEMENT
HEALTH AND WELLBEING, AND THIS IS REINFORCED BY THE OPPORTUNITIES THAT ARE GEN
BY VIRTUAL CENTRES WHICH HAVE ACCESS TO A RANGE OF RESEARCHERS, ALBEIT FROM
NARY BASED GROUPS AND DEPARTMENTS. WHAT HAS NOT BEEN ADDRESSED ADEQU
AND IT COULD BE ARGUED THAT IT IS STILL NOT BEING SO, IS THE CROSS AGENCY
DISCIPLINARY TRAINING IN TRANSDISCIPLINARY EXPERTISE. THIS CALLS FOR AN EXPLORAT
LINKS BETWEEN COMPETENCES FOR SD AND RESEARCH COMPETENCES (LAMBRECHTS AN
PETEGEM, 2016, IN PRESS). RESEARCH AND SUSTAINABILITY SKILLS (E.G. SYSTEMS THIN
AND SOME OF THE CONCEPTUAL (E.G. POSITIVE FEEDBACK) AND PRACTICAL (E.G. D
MING) TOOLS THAT SUPPORT THEM SHOULD BECOME PART OF THE CURRICULUM AND TRA
FOR ALL DISCIPLINES; POSSIBLY AS PART OF A BROAD SUSTAINABILITY MODULE OR COUR

ACTION AND AS SUCH SHOULD BE UNDERTAKEN BY PRACTITIONERS, AND IDEALLY COMMUNITY STAKEHOLDERS, IN THE SAME WAY THAT PROFESSIONAL RESEARCHERS MAY BECOME INDIVIDUALLY ENGAGED IN PRACTICE. THERE IS THEREFORE LIKELY TO BE A SIGNIFICANT RE-DEFINITION OF THE ROLES PLAYED BY, AND EXPECTATIONS OF, DIFFERENT STAKEHOLDERS IN THE CO-CREATION OF MORE SUSTAINABLE, LESS UNSUSTAINABLE, FUTURES.

ACKNOWLEDGEMENTS

THE AUTHORS WOULD LIKE TO THANK ALL PRESENTERS AND PARTICIPANTS TO THE WORKSHOP FOR THEIR VALUABLE INPUT AND FEEDBACK ON THE TOPIC.

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THE ACTION RESEARCH FEATURE WAS TAKEN FURTHER WHEN ENSI WAS LAUNCHED AS A FLEDGED OECD CERI PROJECT IN 1991, AND 'A PEDAGOGICAL SUPPORT PERSON' (CASES A RESEARCHER BASED IN AN UNIVERSITY), WAS APPOINTED IN EVERY COUNTRY PARTICIPATING TO THE PROJECT, WITH THE ROLE OF A TEACHER FACILITATOR: "PROBLEMATISING DESTABILISING THE 'SELF' AND BECOMING REFLEXIVE ARE ALL NECESSARY CONDITIONS FOR ADOPTING AN ACTION RESEARCH APPROACH" (ELLIOT 1995,P.69).

THIS RESEARCH VISION IS STRICTLY CONNECTED WITH A VISION OF ENVIRONMENTAL EDUCATION (EE) AND OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AS ENGAGEMENT FOR A FUTURE WE CANNOT PREDICT. IF EE AND ESD ARE CONCEIVED AS 'EDUCATION FOR THE FUTURE' THEN RESEARCH (AND ACTION RESEARCH) IS NOT A LUXURY RESERVED FOR THE FEW BUT AN OBLIGATION FOR EVERY PROFESSIONAL ENGAGED IN INNOVATION, INCLUDING TEACHERS AND INNOVATORS, TEACHERS ARE ASKED TO TAKE ON, INITIALLY AT LEAST, THE BURDEN OF INNOVATION "TENURE" (STENHOUSE 1975, P.169).

EE AND ESD HAD TO ACCEPT BEING EMBEDDED IN A CULTURE OF COMPLEXITY AND CHANGE, AND FOCUSED ON THE 'STRUCTURE WHICH CONNECTS' ALL THE ELEMENTS OF REALITY (STENHOUSE 1972). IN THIS SITUATION IT IS NO MORE POSSIBLE TO CLEARLY SEPARATE THE OBSERVER FROM THE OBSERVED (MATURANA AND VARELA, 1992) AND IT IS ESSENTIAL TO PAY ATTENTION TO THE 'RELEVANCE' OF QUESTIONS AND TO THE 'VALUES' THAT GUIDE THEORIES AND PRACTICE, RATHER THAN TO THE CORRECTNESS OF RESULTS.

ENSI PROPOSED A SYSTEMIC VIEW OF EDUCATION WHERE GOVERNANCE, TEACHING-LEARNING PROCESSES AND EDUCATIONAL RESEARCH WERE STRICTLY CONNECTED TOGETHER. RESEARCH BECAME ONE OF THE MAIN COMPONENTS OF ANY ENSI PROJECT, AND OF THE NETWORK AS A WHOLE. OTHER COMPONENTS OF ENSI PROJECTS WERE THE PRESENCE OF EDUCATIONAL AUTHORITIES AND OF ACTIVE SCHOOLS/TEACHERS/STUDENTS. EDUCATIONAL RESEARCH GUARANTEES THE CHARACTERISTIC OF CONTINUOUS EXPLORATION AND INNOVATION WHICH EE AND ESD SHOULD HAVE. AS IT WAS WRITTEN AFTER THE RIO+10 JOHANNESBURG MEETING "WHAT MAKES ENSI SO PARTICULARLY EFFECTIVE IS THAT IT HAS FORMED PARTNERSHIPS BETWEEN DIFFERENT LEVELS OF EDUCATION IN A WAY THAT HAS NOT BEEN DONE BEFORE. BETWEEN LOCAL EDUCATION PRACTITIONERS, EDUCATION AUTHORITIES, HIGHER EDUCATION INSTITUTIONS AND GOVERNMENT AGENCIES, ENSI'S PARTNERSHIPS ARE HELPING TO ADDRESS COMMON INTERESTS, AND EMBED CHANGE TOWARDS ENVIRONMENTAL EDUCATION AND SUSTAINABLE DEVELOPMENT IN ALL LEVELS OF THE EDUCATION SYSTEM" (MAYER 2004, P. 70).

RICH IN ENERGY AND ENTHUSIASM, OPEN TO DIFFERENT IDEAS, INTERESTED IN LISTENING AND EXPLORING NEW RESEARCH LINES. THE ENSI AIM WAS TO CONSTITUTE A 'SMALL COMMUNITY OF PRACTICE', SHARING IDEAS AND QUESTIONS ABOUT EE AND ESD UNDER THE UMBRELLA OF THE ENSI INTERNATIONAL NETWORK. ONE OF THE FOCI OF THE ENSI JR IDEA WAS TO INVOLVE THE GROUP IN ENSI NETWORK ACTIVITIES AND PROJECTS, AND TO OFFER MEMBERS OF THE GROUP OPPORTUNITIES FOR REGULAR EXCHANGE IN ORDER TO COMPARE AND DEBATE RESEARCH QUESTIONS AND RESEARCH METHODOLOGIES.

ENSI STARTED JR ACTIVITY 2008 WITH A SEMINAR IN SWITZERLAND, ORGANISED WITH THE SUPPORT OF THE COUNCIL OF EUROPE. THE SEMINAR SOUGHT 'TO HARNESS THE ENERGY AND ENTHUSIASM OF A NEW GENERATION OF RESEARCHERS, COMMITTED TO EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) AND TO POOL THE EXPERTISE OF THOSE RESEARCH NEWCOMERS IN THE FIELD OF ESD BY DEVELOPING A SMALL RESEARCHER'S NETWORK' (ENSI INVITATION 2008).

THE PARTICIPANTS WERE INVITED TO POOL THEIR RESEARCH WITH OTHERS IN THEIR MASTER'S THESIS OR IN OTHER RELATIONAL RESEARCH PROJECTS. THE IDEA WAS TO SHARE DIFFERENT APPROACHES, METHODOLOGIES, RESEARCH TOPICS AND PRIORITIES, AND CULTURAL VALUES BASED RESEARCH STYLES. ENSI OFFERED THE JR'S AN EXPERIENCE IN RESEARCH COLLABORATION AND NETWORKING IN THE FIELDS OF EE AND ESD. A DEEPENING UNDERSTANDING OF ACTION RESEARCH AS A CRUCIAL METHODOLOGY WAS ALSO AN OUTCOME.

THE SEMINAR CONSISTED OF THREE DAYS OF SHARING AND DEBATING WITH 19 RESEARCHERS FROM 11 COUNTRIES: AUSTRALIA, AUSTRIA, CZECH REPUBLIC, GERMANY, HUNGARY, NETHERLANDS, SPAIN, SWEDEN, SWITZERLAND AND THE UK. ISSUES FUNDAMENTAL FOR RESEARCH PRACTICE WERE RAISED INCLUDING:

- THE 'VALUES ISSUE' AND HOW ESD VALUES INFLUENCE THE RESEARCH PARADIGM,
- THE IMPACT OF THE "WORLD VIEWS" OR "WORLD VISIONS" ('MUNDOVISION' IN SPANISH) OF EPISTEMOLOGY AND ONTOLOGY, ON RESEARCH METHODOLOGIES;
- THE INFLUENCE ON RESEARCH DESIGN OF A CONSCIOUSNESS OF HUMAN AND SOCIAL COMPLEXITY;
- THE ROLE OF THE RESEARCHER AND 'THE RESEARCHED' IN EDUCATIONAL RESEARCH;
- THE INFLUENCE ON RESEARCH OF THE KIND OF INSTITUTION IN WHICH A RESEARCHER WORKS, PLACE, AND VICE VERSA.

THE FOLLOWING IS THE SYNTHESIS GIVEN BY ONE OF THE JR, MONIKA RETI (2012) A FEW MONTHS AFTER THE MEETING: "PEOPLE IN THE FIRST PART OF THEIR PROFESSIONAL CAREERS ARE OVERWHELMINGLY EXCITING TO DISCUSS THEIR GENERAL DILEMMAS ABOUT SUSTAINABLE DEVELOPMENT TO DISCOVER HOW OTHERS STRUGGLE WITH SOME SIMILAR RESEARCH PROBLEMS, T

ON PRACTICES AND ON POSSIBILITIES. THE PRISM CONFERENCE GAVE THE ENSI JR NETWORK THE OPPORTUNITY TO TAKE PART IN A JOINT WORKSHOP ON ‘RESEARCHING EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) FOR A BETTER WORLD’. THE WORKSHOP GAVE ABOUT 20 PARTICIPANTS THE OPPORTUNITY TO BECOME ACQUAINTED WITH THE RESEARCH ISSUES AND METHODS OF THE ENSI NETWORK, TO SHARE EXPERIENCES AND CONCERNS WITH ENSI JUNIOR RESEARCHERS AND SENIOR RESEARCHERS, AND TO DISCUSS RESEARCH ISSUES AND METHODOLOGIES.

IN THE PRISM ENSI WORKSHOP DIFFERENT QUESTIONS ABOUT THE UTILITY OF A RESEARCH NETWORK WERE ADDRESSED. THESE QUESTIONS INCLUDED: WHAT DIFFICULTIES AND/OR QUESTIONS DO RESEARCHERS FACE AND HOW CAN A RESEARCH NETWORK HELP AND SUPPORT THEM? WHAT ARE THE ADVANTAGES FOR RESEARCHERS IN BEING ACTIVE MEMBERS OF AN INTERNATIONAL NETWORK; WHAT ARE THE RESEARCH QUESTIONS TO SUGGEST AS A FUTURE CHALLENGE FOR AN INTERNATIONAL NETWORK SUCH AS ENSI?

IN THE FOLLOWING PERIOD ANOTHER IMPORTANT INITIATIVE WAS TAKEN BY ENSI IN ORDER TO INVOLVE THE JR NETWORK IN CONCRETE RESEARCH PRACTICES. ENSI INVOLVED JUNIOR RESEARCHERS IN THE CODES LIFE LONG LEARNING PROJECT ON SCHOOLS AND COMMUNITY FOR SUSTAINABLE DEVELOPMENT. THIS PROJECT RAN FROM 2011 TO 2014 AND THE QUALITY ASSURANCE CODES PROJECT WAS THE RESPONSIBILITY OF ENSI, AND WITHIN THE DIFFERENT FEEDBACK THAT CHARACTERISED THE ENSI APPROACH TO EVALUATION (DISCUSSED BY MAYER AND DAVIES IN A DIFFERENT CHAPTER IN THIS BOOK), ANOTHER INNOVATIVE EVALUATION METHOD WAS ADDED. THE INTERNAL EVALUATION OF THE THREE MAIN CONFERENCES WITHIN THE PROJECT WAS DELEGATED EACH YEAR TO A DIFFERENT PAIR OF JUNIOR RESEARCHERS IN EACH OF THE JUNIOR RESEARCHERS WERE NOT INVOLVED IN OTHER PARTNER INSTITUTIONS AND WERE NEW TO THE PROJECT. IN THIS WAY, THE EVALUATION PROCESS INTEGRATED FRESH PERSPECTIVES AND AT THE SAME TIME ALLOWED PEOPLE COMING FROM DIFFERENT TRADITIONS TO COMMENT ON THE PROJECT.

THE JUNIOR RESEARCHERS WORKED UNDER THE GUIDANCE OF MICHELA MAYER WHO SERVED AS INTERNAL EVALUATOR OF THE CODES PROJECT AND AS SUCH WAS RESPONSIBLE FOR THE FEEDBACK THE JRs BROUGHT WITH THEM NEW IDEAS, NEW EVALUATION TOOLS, FRESH ENTHUSIASM AND PRODUCED GOOD QUALITY REPORTS. THEY WERE ALSO IMPORTANT FOR THE DISSEMINATION OF THE CODES PROJECT WORK IN INSTITUTIONS THAT WERE NOT CODES PARTNERS. THE JUNIOR RESEARCHERS INVOLVED WERE ALL WOMEN, COMING FROM DIFFERENT BACKGROUNDS AND COUNTRIES. SOME OF THEIR COMMENTS AFTER THE COMPLETION OF THEIR WORK GAVE AN INTERESTING REFLECTION ON THE IMPORTANCE OF THIS KIND OF EXCHANGE FOR RESEARCHERS AT THE BEGINNING OF THEIR CAREER:

Q1. How did you perceive ENSI's research and innovation activities when you approached ENSI?

- JRS PERCEIVED ENSI AS A DYNAMIC AND INDEPENDENT NETWORK OF RESEARCH INNOVATION OPENING NEW WAYS OF UNDERSTANDING ENVIRONMENTAL EDUCATION AND RESEARCH PARADIGMS. IN PARTICULAR THE ACTION-ORIENTED APPROACHES SUCH AS ACTION RESEARCH UNDERTAKEN BY THE NETWORK WERE SEEN AS CRITICAL TO LINK “RESEARCH TO PRACTICE AND ACTION” CONNECTING STAKEHOLDERS AT “ALL LEVELS OF THE EDUCATION SECTOR WITH EXPERTISE IN CURRICULUM, SCHOOL POLICY...”
- ENSI CONNECTED RESEARCHERS, FUELING THE COMPETENCES OF “MY WORK AND THE WORK OF OTHERS” AND OPENING UP A BROADER AND DIFFERENT VIEW OF WHAT ESD RESEARCH COULD IMPLY.
- ENSI INVOLVED THE JR MEMBERS IN SEVERAL EUROPEAN PROJECTS SUCH AS SEED, COOPERATION SUPPORT AND CODES, EMPHASISING SUSTAINABLE DEVELOPMENT AND SCHOOLS.
- THE INTERNATIONAL COOPERATION HAS BEEN MENTIONED AS AN ENCOURAGING AND AT THE SAME TIME DIFFICULT ENDEAVOR DUE TO LANGUAGE BARRIERS AND CULTURAL DIFFERENCES. THIS COMPLICATED THE PROCESS TO THE EXTENT THAT IT HINDERED THE EMERGENCE OF REAL INNOVATION.
- IN GENERAL THE PARTICIPATION IN ENSI HAD BEEN PERCEIVED AS EMPOWERING FOR THE JR MEMBERS. THE NETWORK WELCOMED THEM AS YOUNG PEOPLE WITH “OPEN ARMS” AND PLACED THE RESPONSIBILITY OF PARTICULAR TASKS ON THEM. THAT WAS BEEN PERCEIVED AS A RARE OPPORTUNITY, BECAUSE REPRESENTATIVES OF THE “YOUTH ARE SELDOM MEANINGFULLY ENGAGED OR CONSULTED ... FOR EXISTING PROJECTS, PROGRAMS AND EVALUATIONS. THIS KIND OF SUPPORT IS IMPORTANT, BECAUSE RESEARCHERS AT THE BEGINNING OF THEIR CAREER OFTEN “FACE CRITIQUE AND UNACCEPTANCE”, WHEN UNDERTAKING INNOVATIVE APPROACHES.

Q2. To what extent your involvement with ENSI contributed to your vision of ESD and to your research activities?

- JR MEMBERS VALUED FOLLOWING OTHER RESEARCHERS IN THE ENSI AND JR COMMUNITY IN EXPERIMENTING ON THEIR “WINDING ROAD, AND IN A CONTINUUM OF REFORMULATION AND DISCOVERY OF NEW WAYS TO UNDERSTAND THINGS”, WHICH SOMETIMES END UP IN PHD THESES. THE ENSI JR MEETINGS SERVED TO STRUCTURE WORK, AND ENRICH IT WITH CONTRIBUTIONS FROM OTHER PEOPLE AND OTHER RESEARCH, AND THROUGH BEING “TAUGHT TO ASK THE RIGHT QUESTIONS”. THE MEMBERS COULD ACTIVELY AND PROFESSIONALLY EXPLORE THE CONCEPTS AND PRINCIPLES OF ESD.
- ENSI ACTIVITIES TRIGGERED JRS TO APPROACH ESD BASED ON RESEARCH PARADIGMS SUCH AS “ACHIEVE MORE HUMAN GOALS” AS ENCOUNTERS TO EXPLORE DIFFERENCES AND TO EMERGING COMPLEXITY, THE ACTION COMPETENCE APPROACH, THE SOCIO-CRITICAL PARADIGM

CONCLUSION

THE FINDINGS OF THE SURVEY HIGHLIGHT SOME OF THE CRUCIAL COMPONENTS OF RESEARCHER'S INVOLVEMENT IN AN INTERNATIONAL NETWORK FOR RESEARCH AND INNOVATION AND ESD. THE JR'S EXPRESSED THEIR COMMITMENT TO A NETWORK THAT OFFERS A UNIQUE APPROACH OF DIVERSE STAKEHOLDERS IN THE EDUCATIONAL FIELD OF EE AND ESD. THEY VALUED THE CHANCES TO PARTICIPATE IN ACTIVE ROLES AS EVALUATORS AND CO-RESEARCHERS TO GAIN IN-DEPTH VIEWS INTO THE WORK OF NATIONAL AND INTERNATIONAL COLLABORATION OF RESEARCHERS, POLICY MAKERS, COMMUNITY MEMBER AND EDUCATIONAL PRACTITIONERS. THE PARTICIPATION SUPPORTED THEIR STUDENT'S AND RESEARCH CAREERS AND ENABLED THEM TO GAIN PERSPECTIVES ON THE EPISTEMOLOGICAL PARADIGMS OF EE AND ESD.

IN SUMMARY IT SEEMS THAT THE ENSI NETWORK OFFERED SOMETHING SPECIAL. IT WAS THEIR FIRST-HAND EXPERIENCE IN THE PRACTICAL ACTIONS CONDUCTED AROUND THE WORLD IN THE FIELD OF ESD THAT MAKE THE ENSI JR 'UNIQUE'. IN THE UNESCO MIDTERM REVIEW REPORTS ON CONTEXTS AND STRUCTURES FOR ESD, ARJEN WALSH IN 2008, NOTICED:

"LITTLE EVIDENCE WAS PROVIDED IN THE MID-TERM REVIEW THAT THERE ARE POLICIES IN PLACE IN FORMAL EDUCATION, PROFESSIONAL DEVELOPMENT AND TEACHER TRAINING THAT ENCOURAGE EDUCATORS TO BECOME REFLECTIVE PRACTITIONERS THEMSELVES AND TO CONDUCT THEIR OWN RESEARCH. THERE ARE, HOWEVER, SOME NETWORKS OF PRACTITIONERS AND ACADEMICS THAT SEEK TO BRIDGE THE THEORY PRACTICE DIVIDE USING FORMS OF ACTION RESEARCH TO INFLUENCE PRACTICES" (UNESCO 2009 P. 62; THE ENSI DESCRIPTION FOLLOWS IN BOX 27).

THE JR'S ALSO GAVE CRITICAL FEEDBACK AND EXPRESSED ASPIRATIONS IN THEIR FEEDBACK. INTERNATIONAL COLLABORATION IS EXPENSIVE AND AS ALL CULTURAL EXCHANGES SOMEWHAT REQUIRE SIGNIFICANT EFFORT IN TERMS OF LANGUAGE AND INTERCULTURAL ABILITIES. IN ADDITION, THE PERSONAL LIFE AND CAREERS OF JR MEMBERS NATURALLY LEADS TO A FLUCTUATING MEMBERSHIP AND THEREFORE A CHALLENGE TO LONG-TERM COLLABORATIONS. THE WILLINGNESS OF JR'S TO PARTICIPATE IN ENSI IN PERIPHERAL AND SOMETIMES CENTRAL POSITION IS ENCOURAGING. IT IS UP TO ENSI TO OPEN THEIR FREQUENT ACTIVITIES TO JR. FOR EXAMPLE, OPPORTUNITIES FOR JR TO TAKE PART IN BOTH CONFERENCES AND FUNDED PROJECTS WOULD BE HUGELY WELCOMED BY BOTH EXISTING JR MEMBERS AS WELL AS NEW CANDIDATES.

OTHER POSSIBILITIES TO ENHANCE THIS KIND OF EXCHANGE AND COLLABORATION MIGHT BE TO IMPROVE UNIVERSITIES OPENNESS TO ACTION ORIENTED INTERNATIONAL NETWORKS. WHAT MADE A DIFFERENCE IN THE ENSI NETWORK WASN'T JUST THE DEEPNESS OF THE THEORETICAL APPROACH — THAT COULD BE OFFERED BY MANY UNIVERSITIES — BUT THE MIXTURE OF THE BALANCE BETWEEN, ACADEMIC RIGOUR AND PRACTICAL INVOLVEMENT. THE COLLABORATION BETWEEN UNIVERSITIES IS VERY IMPORTANT (AT THE MOMENT THERE IS IN EUROPE AN INTEREST

IN: KYBURZ-GRABER REGULA; HART, PAUL; POSCH PETER AND ROBOTOM, IAN (EDS.) REFLECTIVE PRACTICE IN TEACHER EDUCATION, BERN: PETER LANG AG, PP. 139-153

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ENVIRONMENTAL DEGRADATION, INEQUALITIES, WARS AND POVERTY ERADICATION (UNITED NATIONS, 2012) AND IN THIS GLOBAL CONTEXT, THE IDEA OF SUSTAINABILITY AS THE WAY FORWARD TO ENSURE QUALITY OF LIFE, EQUITY WITHIN AND BETWEEN CURRENT AND FUTURE GENERATIONS AND ENVIRONMENTAL HEALTH, HAS GAINED WIDESPREAD INTERNATIONAL RECOGNITION.

ALTHOUGH THE CONCEPTUALISATION OF SUSTAINABILITY REMAINS CONTROVERSIAL, AND THERE ARE DIFFERENT PERSPECTIVES AND DEFINITIONS OF THE TERM (DRESNER, 2002), THE APPROACH TO SUSTAINABILITY IS TO GENERATE SCIENTIFIC KNOWLEDGE, AS WELL AS OTHER FORMS OF KNOWLEDGE, FROM DIFFERENT SUBJECT AREAS, SUCH AS SOCIAL AND ENVIRONMENTAL SCIENCES, ECONOMICS, ETHICS AND POLITICS.

TRANSDISCIPLINARITY (TD) BREAKS AWAY FROM THIS FRAGMENTARY DISCIPLINARY TRADITION (RAMADIER, 2004) PRESERVING THE DIFFERENT REALITIES TO CONFRONT THEM IN A COMMON WAY, NO LONGER SEARCHING FOR CONSENSUS BUT FOR ARTICULATIONS. THE INTELLECTUAL IS ALSO WHAT POSSIBLY MOST CLEARLY DISTINGUISHES TD FROM BOTH MULTI AND INTERDISCIPLINARY INQUIRY. AS MULTI REFERS TO COOPERATION AMONG EPISTEMIC STAKEHOLDERS WITHIN AN INTELLECTUAL COOPERATION AND INTER REFERS TO COOPERATION THROUGH AN INTERDISCIPLINARY CONCEPT, TD REFERS TO INTELLECTUAL COOPERATION BY AD HOC RULES ADOPTED FOR EACH INDIVIDUAL CASE (HUUTONIEMI ET AL., 2010).

SUSTAINABILITY AND TRANSDISCIPLINARITY

SUSTAINABILITY PROBLEMS ARE WIDELY RECOGNISED AS WICKED PROBLEMS (HADORN ET AL., 2006; LAWRENCE AND DESPRÉS, 2004; KLEIN, 2014; SEAGER ET AL., 2012; RIEBER ET AL., 2012; WIEK ET AL., 2011; BRUNDIERS AND WIEK, 2010). AS NORTON (2005) CONCEPTUALISES, SUSTAINABILITY PROBLEMS TYPICALLY EXHIBIT FIVE CHARACTERISTICS THAT ARE SHARED BY WICKED PROBLEMS: DIFFICULTIES IN PROBLEM FORMULATION, MULTIPLE BUT INCOMPLETE SOLUTIONS, OPEN-ENDED TIMEFRAMES, NOVELTY (OR UNIQUENESS) AND COMPETING SYSTEMS OR OBJECTIVES (SEAGER ET AL., 2012). IN THIS SENSE, BEYOND THE SCIENCE OF THE CURRENT INDUSTRIAL-AGE SCIENCE, SUSTAINABILITY PROBLEMS INVOLVE DEALING WITH AMBIGUITY, COMPLEXITY, DIFFERENT STAKEHOLDERS, VIEWS AND VALUES AND ARE DIFFICULT TO SOLVE BECAUSE OF THEIR EVOLVING AND MOVING NATURE. THE SCIENTIFIC EXPERTISE NEEDED TO DEAL WITH THESE MULTIFACETED AND COMPLEX SUSTAINABILITY PROBLEMS NATURE IS IN NEED OF REFORM, SO THAT IT REQUIRES INNOVATION, CREATIVE THINKING AND PROBLEM-DRIVEN, ACTION-ORIENTATED AND TRANSDISCIPLINARY APPROACHES.

THE CONCEPT OF TD HAS ALSO BECOME ALIGNED WITH SUSTAINABILITY IN THE MOST RECENT DISCOURSE ON PROBLEM SOLVING (KLEIN, 2014). KNOWLEDGE DEMANDS FROM SOCIETY ABOUT ISSUES THAT CALL FOR CHANGE IN SOCIETAL PRACTICES. THESE CAN BE COMPLEX

NOT AVAILABLE AND CONSEQUENTLY, APPROVED GUIDING STANDARDS FOR TRANSDISCIPLINARY RESEARCH AND EDUCATION ARE ALSO LACKING. ONE REASON COULD BE THAT, AT FIRST, TD APPEARS TO BE A RATHER ELUSIVE CONCEPT.

BEYOND CROSS-DISCIPLINARY METHODOLOGIES (SCHOLZ AND MARKS, 2001) TD IS TRANSDISCIPLINARITY, TRANSGRESSING, AND TRANSFORMING. IT IS THEORETICAL, CRITICAL, INTEGRATIVE, AND RESTRUCTURING BUT, AS A CONSEQUENCE OF THAT, IT IS ALSO BROADER AND MORE EXPLICIT (HADORN, 2008). THUS BY BRINGING ABOUT MUTUAL LEARNING, COLLABORATIVE RESEARCH, AND PROBLEM SOLVING AMONG BUSINESS, GOVERNMENT AND CIVIL SOCIETY, TD CAN SERVE AS AN IMPORTANT GUIDING CONCEPT FOR SUSTAINABILITY SCIENCE AND PRACTICE. TD EMERGES TO COUNTERACT THE TENDENCY OF DISCIPLINES TO SEPARATE KNOWLEDGE INTO ISOLATED COMPARTMENTS (RUSSELL ET AL., 2008). THE CENTRAL CHALLENGES OF TRANSDISCIPLINARITY

- **Crossing boundaries** BETWEEN DISCIPLINES, BETWEEN ACADEMIA-SOCIETY, INDIVIDUALS-COMPANIES, BETWEEN FORMS OF GENERATING KNOWLEDGE AND COMMUNICATION, AND BETWEEN EDUCATIONAL SYSTEMS;
- 'NOT FOR SOCIETY, **with society** (INIT, 2012): MOVING FROM A CONCEPTION OF RESEARCH ON OR FOR SOCIETY, TO RESEARCH WITH SOCIETY;
- **Co-production and integration of „knowledge“** RELATED TO THE RESOLUTION OF A COMPLEX AND EVOLVING PROBLEM, IT IS CONSIDERED THE MAIN COGNITIVE CHALLENGE OF THE TRANSDISCIPLINARY PROCESS. A PROBLEM SOLVING PROCESS MOVES TO A PROCESS OF COLLABORATION. APPROACH OF PROBLEM DEFINITION AND PROBLEM MANAGING.

FROM DISCIPLINE TO TRANSDISCIPLINE

DIFFERENT APPROACHES EXIST BETWEEN DISCIPLINARITY AND TRANSDISCIPLINARITY (SEE FIGURE 1, FIGURE 1).

DISCIPLINARITY IS ABOUT A MONO-DISCIPLINE, WHICH REPRESENTS SPECIALISATION IN ONE FIELD. IN BOTH MULTIDISCIPLINARITY AND PLURIDISCIPLINARITY, DISCIPLINES ARE CONSIDERED AS BEING COMPLEMENTARY AND JUXTAPOSED IN THE PROCESS OF UNDERSTANDING PHENOMENA. TAKING INTO ACCOUNT ONLY PART OF EACH MODEL, IN ORDER TO MAINTAIN COHERENCE AND CLARITY. THIS APPROACH HIGHLIGHTS THE DIFFERENT DIMENSIONS OF THE OBJECT STUDIED AND RESPECTS THE PLURALITY OF POINTS OF VIEW, SEARCHING FOR CONSENSUS.

INTERDISCIPLINARITY DIFFERS FROM MULTIDISCIPLINARITY IN THAT EITHER IT CONSISTS OF A COMMON MODEL FOR THE DISCIPLINES INVOLVED, OR TRANSFERS MODELS OR TOOLS FROM ONE DISCIPLINE TO ANOTHER BASED ON A PROCESS OF DIALOGUE BETWEEN DISCIPLINES. THE PURPOSE BEING TO CREATE A NEW APPROACH, AS NEW NEEDS AND PROFESSIONS HAVE EMERGED (E.G. BIOTECHNOLOGY, CHEMINFORMATICS, NUCLEAR MEDICINE). INTERDISCIPLINARITY

PLINES, AND IT IS BASED ON PARTICIPATION AND COLLABORATION BETWEEN DIFFERENT A AND STAKEHOLDERS.

TD IS ALSO SEEN AS AN AMBIGUOUS AND CONTESTED CONCEPT WITH A VARIETY OF TERM LOGIES AND DEFINITIONS AND DIVERSE RESEARCH APPROACHES USED. YET WHERE CON OR IDEAS ARE NOT PROPERLY DEFINED, THE RISK IS, THAT A RATHER SHALLOW INTERPRE PREVAILS, A FATE THAT PARADIGMATICALLY BEFALLS THE NOTION OF SUSTAINABILITY. TH DAMAGE THAT CAN OCCUR WITH SUCH A MAINSTREAMING IS, THAT THE TRUE CHALLENGE TRANSDISCIPLINARY COLLABORATION ARE UNDERESTIMATED (JAHN ET AL., 2012).

IN THE EARLIER CONCEPTUALISATIONS TD WAS UNDERSTOOD AS A SUPERIOR FORM OF IN CIPLINARITY WITH ITS AIM BEING TO DEVELOP AN OVERARCHING FRAMEWORK FOR C PROBLEMS THAT NEEDED TO WORK ACROSS DISCIPLINES.

BY THE END OF THE LAST CENTURY NEW DEFINITIONS OF TD AS A METHODOLOGY EMERGE WAS MAINLY BECAUSE OF THE NEED TO FACILITATE A BROADER SCIENTIFIC AND CULTURA GUE WITHIN THE NEW COMPLEXITY VIEW AND THE NEED TO DEAL WITH REAL-LIFE PROBLE SUCH AS SUSTAINABILITY (KLEIN, 2004). THUS TD IS A REFLEXIVE, INTEGRATIVE, COOPER METHOD-DRIVEN PROCESS THAT AIMS TO (LANG ET AL., 2012):

- A) IDENTIFY THE SOLUTIONS TO OR TRANSITIONS OF RELEVANT SOCIETAL PROBLEMS AN CURRENTLY OF RELATED SCIENTIFIC PROBLEMS BY INTEGRATING KNOWLEDGE FROM SCIENTIFIC AND SOCIETAL BODIES OF KNOWLEDGE;
- B) ENABLE MUTUAL LEARNING PROCESSES AMONGST RESEARCHERS FROM DIFFEREN PLINES (FROM WITHIN ACADEMIA AND FROM OTHER RESEARCH INSTITUTIONS) AS WELL ACTORS FROM OUTSIDE ACADEMIA, ON AN EQUAL BASIS; AND
- C) CREATE AND INTEGRATE KNOWLEDGE THAT IS SOLUTION-ORIENTATED, SOCIALLY ROB TRANSFERABLE TO BOTH THE SCIENTIFIC AND SOCIETAL PRACTICE, ALSO CONSIDERIN CAN SERVE DIFFERENT FUNCTIONS, INCLUDING CAPACITY BUILDING AND LEGITIMISATI

TD RESEARCH IS ALSO CONSIDERED A FORM OF ACTION RESEARCH. PARTICIPATION AND I CIRCLES HAVE TO START FROM THE BEGINNING WHERE THE SCIENTIST ACTS AS AN "OBS OF THE COMMON LEARNING PROCESS" (HÄBERLI ET AL., 2001). THE CONCEPT OF KNOWLEDGE TO ACTION FOR SUSTAINABILITY (KATES ET AL., 2001) OBVIOUSLY REQUIRE DIFFERENT TYPE OF RESEARCH AND EDUCATION TO GENERATE THE KNOWLEDGE THAT MA TO PEOPLE'S DECISIONS, CREATE AN EDUCATION THAT ENABLES STUDENTS TO BE V CREATIVE, AND RIGOROUS IN DEVELOPING SOLUTIONS, AND LEAVE THE PROTECTED THE CLASSROOM TO CONFRONT THE DYNAMICS AND CONTRADICTIONS OF THE REAL WOR ET AL., 2011). ALSO, TD RAISES THE QUESTION NOT ONLY OF SOLVING PROBLEMS, BUT

IN RELATION TO THE TECHNICAL, SOCIAL, HISTORICAL, LEGAL AND CULTURAL DIMENSIONS AMONGST OTHERS. IT IS RELATED TO THE MEANS NEEDED TO TRANSFORM EXISTING ACQUISITION INTO NEW DIRECTIONS.

THE DOMAIN OF TD RESEARCH IS SITUATED AT THE INTERFACE BETWEEN THESE THREE TYPES OF KNOWLEDGE, WHICH ARE SEEN AS TO BE COMPLEMENTARY. AS FIGURE 3 SHOWS, GAZIULUSOY AND BOYLE (2013), LINKED THE PYRAMID OF TD WITH THE THREE TYPES OF KNOWLEDGE OF THE TRANSDISCIPLINARY RESEARCH PROCESSES.

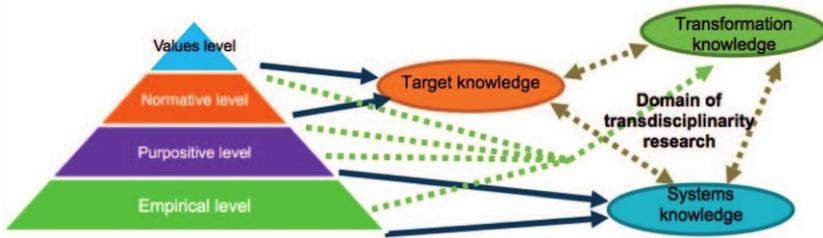


Figure 3. Relationships between the pyramid of transdisciplinarity and the three types of knowledge of the transdisciplinary research (Gaziulusoy and Boyle, 2013)

SYSTEMS KNOWLEDGE IS MAINLY ACQUIRED FROM THE TWO BOTTOM LEVELS, WHICH PROVIDE THE EMPIRICAL INFORMATION NECESSARY TO UNDERSTAND PHENOMENA AND SITUATIONS. TARGET KNOWLEDGE INVOLVES VISIONING FOR A NEW SYSTEM STATUS, AND IS MAINLY OBTAINED FROM THE NORMATIVE AND THE VALUES LEVELS OF THE PYRAMID. TRANSFORMATION KNOWLEDGE DOES NOT DIRECTLY LINK TO ANY OF THE LEVELS OF THE PYRAMID SINCE THE MEANS TO ACHIEVE THIS TRANSFORMATION ARE AMORPHOUS AND VARY ACCORDING TO THE PROBLEM OR SITUATION BEING ADDRESSED. IT IS THEREFORE GENERATED THROUGH THE REFLECTION AND SYNTHESIS OF KNOWLEDGE FROM ALL FOUR LEVELS OF THE PYRAMID.

TRANSDISCIPLINARITY IN HIGHER EDUCATION FOR SUSTAINABILITY

SPANGENBERG (2011, P. 275) SUGGESTED THERE IS A DISTINCTION BETWEEN THE 'TRADITIONAL DISCIPLINARY-BASED SCIENCE FOR SUSTAINABILITY (DESCRIPTIVE-ANALYTICAL) AND 'A TRANSDISCIPLINARY SCIENCE OF SUSTAINABILITY' (TRANSFORMATIONAL)". IN OTHER WORDS, SUSTAINABILITY SCIENCE IN ITS TRANSFORMATIONAL MODE SEEKS BROAD TRANSDISCIPLINARY PARTICIPATION THROUGHOUT RESEARCH AND PRACTICE, FOCUSED ON SOLVING SUSTAINABILITY PROBLEMS. REGARDING COMPLEX, ACTUAL "WICKED PROBLEMS", KATES AND COLLEAGUES MAINTAIN THAT SUSTAINABILITY RESEARCH AND TRANSDISCIPLINARY RESEARCH STRONGLY OVERLAP AND ARE HENCE CONSIDERED INTERCHANGEABLE (KATES ET AL., 2001).

INITIATIVES AND PRACTICES HAVE BEEN COLLECTED FROM NETWORK WEBSITES, PUBLICATIONS, FROM CONFERENCES, AND BOOKS:

Compulsory courses in undergraduate programs

MINOR SUSTAINABILITY IN HUMANITIES, LEUPHANA UNIVERSITY, GERMANY;
FIRST-YEAR COURSE: SOCIETY, SCIENCE AND CULTURE, FACULTY OF EDUCATION-GRET, UNIVERSITY OF WÜRZBURG, GERMANY;
ECOSYSTEM HEALTH PROGRAM, UNIVERSITY OF WESTERN ONTARIO, CANADA.

Master programs

GRADUATE STUDIES AND CONTINUING EDUCATION IN TRANSDISCIPLINARITY, ETH-UNS, ZÜRICH, SWITZERLAND;
MASTER IN SUSTAINABLE DEVELOPMENT, UNIVERSITY OF BASEL, SWITZERLAND;
MASTER'S PROGRAM SUSTAINABILITY SCIENCE, LEUPHANA UNIVERSITY, GERMANY;
MASTER IN SCIENCE AND TECHNOLOGY FOR SUSTAINABILITY, UPC-BARCELONATECH, SPAIN.

Doctoral programs

TRANSDISCIPLINARY PH.D. PROGRAM, STELLENBOSCH UNIVERSITY, SOUTH AFRICA;
TRANSDISCIPLINARITY COURSE AT DOCTORAL SCHOOL "EUROPEAN PARADIGM", BABES-BOLYAI UNIVERSITY, ROMANIA.

Winter or summer courses

"SCIENCE MEETS PRACTICE" WINTER SCHOOL, COMPETENCE CENTER ENVIRONMENT AND SUSTAINABILITY- CCES, WISLIKOFEN, SWITZERLAND;
TD SUMMER SCHOOL, LEUPHANA UNIVERSITY.

Workshops

TRAINING COURSES OR ACTIVITIES FOR PROFESSIONALS AND OTHER ACADEMIC MODALITIES
WAGENINGEN INITIATIVE FOR STRATEGIC INNOVATION, WAGENINGEN UR, NETHERLANDS;
INTENSIVE PARTICIPATORY DESIGN PROCESS LED BY THE INTERDISCIPLINARY RESEARCH GROUP
SUBURBS- GIRBA, FACULTÉ AMÉNAGEMENT, D'ARCHITECTURE, D'ART ET DE DESIGN, UNIVERSITÉ
LAVAL OF QUÉBEC CITY, CANADA.

A FEW UNIVERSITIES HAVE IMPLEMENTED AN EXPERIENTIAL LEARNING ENVIRONMENT THAT
AFFECTS THE WHOLE LEARNING AND CAMPUS LIVING OF STUDENTS INCLUDING THE INSTITUTE
FOR SUSTAINABILITY AND TECHNOLOGY POLICY, MURDOCH UNIVERSITY, AUSTRALIA; LEUPHANA
UNIVERSITY OF LUNEBURG, GERMANY; AND THE SCHOOL OF SUSTAINABILITY, ARIZONA STATE
UNIVERSITY- ASU, USA.

GENERALLY SPEAKING, ACADEMIC PROGRAMMES TEND TO BE LOCATED WITHIN DISCIPLINARY

THIS CHAPTER FOCUSES ON THE POTENTIAL OF TRANSDISCIPLINARITY TO BREAK THE DOMINANT RESEARCH AND EDUCATION APPROACH OF FRAGMENTATION AND TO AVOID REPRODUCING ELEMENTARY MODELS TYPICAL OF DISCIPLINARY THINKING. AN UNANTICIPATED ANALOGY EMERGES BETWEEN THE KIND OF ADDITIONAL RESPONSIBILITY CENTRAL TO THE TD EXPERIENCE AND THE ADDITIONAL RESPONSIBILITY THAT IS CENTRAL TO MOVING TOWARD SUSTAINABILITY. THE WAYS THAT POINT THE WAY TO TRANSDISCIPLINARITY FOR SUSTAINABILITY ARE THE REVISION OF CURRENT BEST PRACTICE AND BEST THINKING ON TEACHING AND LEARNING POSSIBILITIES. THE FUTURE AIM IS TO INTEGRATE AND TO CO-CREATE BETWEEN DISCIPLINES, BETWEEN RESEARCHERS AND PRACTITIONERS, AND BETWEEN RESEARCH-BASED KNOWLEDGE AND ACTION.

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(FIEN, 2002; CORCORAN ET AL., 2004). IT COULD BE ARGUED THAT THE FOCUS OF RESEARCH DATE HAS BEEN ON EXPLAINING PART OF THE TRANSFORMATION STORIES, AS PAPERS HAVE CENTRATED ON THE ACHIEVEMENTS AND POSITIVE EXPERIENCES WITHOUT PAYING SUFFICIENT ATTENTION TO THE BARRIERS TO PROGRESS AND THE PROCESS OF CHANGE PER SE (VELAZQUEZ ET AL., 2005). THE ENVIRONMENTAL MANAGEMENT AND GREENING OF CAMPUS OPERATIONS AND ESTATES HAS SEEN MUCH MORE PROGRESS THAN CURRICULUM DEVELOPMENT (JONAS ET AL., 2010). DESPITE THE EMERGING LITERATURE, THE SIGNING OF INTERNATIONAL DECLARATIONS AND THE CREATION AND DEVELOPMENT OF UNIVERSITY STRATEGIES AND POLICIES, LITTLE IMPLEMENTATION AND HOLISTIC TRANSFORMATION HAS BEEN ACHIEVED IN THE CURRICULUM AREA SO FAR (THOMAS, 2004; CEBRIÁN, 2014). CURRICULUM, PEDAGOGY, STRUCTURE, ORGANISATION AND ETHOS ARE THE SHAPING DIMENSIONS OF EDUCATION, THEREFORE EMBEDDING SUSTAINABILITY IMPLIES A CULTURAL CHANGE RATHER THAN AN ADD-ON TO EXISTING CURRICULA AND STRATEGIES (STERLING, 2004).

THE EXISTING BODY OF LITERATURE REPORTS ON DIFFERENT UNIVERSITY EXPERIENCES WITH IMPLEMENTING SUSTAINABILITY, BUT HE INSTITUTIONS HAVE SO FAR FAILED TO BRING ABOUT THE NECESSARY STRUCTURAL CHANGES REQUIRED FOR THE PARADIGM SHIFT AND TRANSFORMATION ADVOCATED BY EDUCATION FOR SUSTAINABILITY (EFS) EXPERTS (STERLING, 2004; 2012). MOST OF THE RESEARCH HAS FOCUSED ON SMALL-SCALE PROJECTS AND EXAMPLES OF GOOD PRACTICE THAT SHOW THE POTENTIAL FOR CREATING ORGANISATIONAL LEARNING AND THE BECOMING A LEADER AND INNOVATOR TO ADVANCE SUSTAINABILITY (ALBRECHT ET AL., 2008; BERINGER AND ADOMSENT, 2008). THESE PROJECTS HAVE GENERALLY PROVED SUCCESSFUL BUT THEY ARE SOMETIMES FRAGMENTED AND OFTEN HAPPEN ON THE MARGINS OF THE INSTITUTION (SHARP, 2002).

INSTITUTIONAL COMMITMENT, ALLOCATION OF RESOURCES FOR INNOVATIVE PROJECTS, INVESTMENT AND THE PROFESSIONAL DEVELOPMENT OF STAFF, AMONGST OTHER FACTORS, ARE NEEDED FOR A HOLISTIC CURRICULUM CHANGE TOWARDS EMBEDDING SUSTAINABILITY (RYAN, 2011). THERE ARE SEVERAL AREAS OF RESEARCH ON SUSTAINABILITY IN HE, WHICH SO FAR HAVE BEEN OVERLOOKED: THE PROFESSIONAL DEVELOPMENT OF STAFF, ORGANISATIONAL LEARNING AND CHANGE MANAGEMENT AND LEADERSHIP (THOMAS, 2004; TILBURY, 2012; CEBRIÁN ET AL., 2013). FEW CONTRIBUTIONS IN THE LITERATURE REPORT ON LESSONS LEARNED DERIVED FROM SUCCESSFUL ORGANISATIONAL CHANGE PROJECTS AND THE WIDER APPLICATION OF THESE IN HE (VELAZQUEZ ET AL., 2015; VERHULST AND LAMBRECHTS, 2015, IN PRESS). UNIVERSITIES FACE TWO MAJOR CHALLENGES IN BECOMING LEARNING ORGANISATIONS TOWARDS SUSTAINABILITY: THE FACT THAT SUSTAINABILITY IS AN EVOLVING AND MOVING TARGET AND THE NEED TO “BECOME SKILFUL AT THE PROCESS OF CHANGE ITSELF” (SHARP, 2002, P. 129). FURTHER RESEARCH IS NEEDED TO UNDERSTAND THE PROCESSES OF ORGANISATIONAL CHANGE AND LEARNING TOWARDS EMBEDDING SUSTAINABILITY.

IN THE CURRICULUM AND INSTITUTION. THE METHODOLOGICAL PRINCIPLES OF ACTION RESEARCH ARE: THE INTEGRATION OF RESEARCH AND ACTION; IT IS CONDUCTED THROUGH COOPERATIVE PARTNERSHIPS; THERE IS A HIGH LEVEL OF REFLECTION; IT STIMULATES TRANSFORMATIVE LEARNING AMONGST PARTICIPANTS; IT EMBRACES BROADER POLITICAL AND HISTORICAL CONTEXTS; AND IT STARTS FROM ASPIRATION AND A VISION OF SOCIAL TRANSFORMATION AND SOCIAL JUSTICE (SOMEKH, 2006).

FOR NOFFKE (2009), THERE ARE THREE DIMENSIONS OF AN ACTION RESEARCH APPROACH: THE PERSONAL, THE PROFESSIONAL AND THE POLITICAL. THESE DIMENSIONS CAN BE DIFFERENTIATED ACCORDING TO THE PURPOSE OF THE ACTION RESEARCH WORK IN EDUCATIONAL SETTINGS. DIFFERENT ASSUMPTIONS AND PRACTICES CAN BE RECOGNISED. THE PERSONAL DIMENSION MAKES REFERENCE TO THE PRACTITIONER AS RESEARCHER AND THE PROCESSES OF SELF-REFLECTION, PLANNING AND INTRODUCING CHANGES TO IMPROVE SELF-PRACTICE (MCNIFF AND WHITE, 2002). THE PROFESSIONAL DIMENSION CORRESPONDS TO PROFESSIONAL DEVELOPMENT WHICH USUALLY IN EDUCATION HAVE THE AIM OF ENHANCING THE SKILLS OF THE TEACHERS OF THE PROFESSION (NOFFKE, 2009). THE POLITICAL DIMENSION IS USUALLY EMBEDDED IN THE OTHER TWO DIMENSIONS, BUT THE PURPOSE IS MAINLY TO GENERATE DEMOCRATIC PROCESSES AND TO EMPOWER THOSE GROUPS THAT ARE OFTEN WITHOUT A VOICE, SUCH AS LOWER SOCIO-ECONOMIC GROUPS AND UNDERPRIVILEGED COMMUNITIES (CARR AND KEMMIS, 2009). IT IS LINKED TO POWER AND POLITICAL ISSUES, STRUCTURES, PARTICIPATION AND THE DECISION-MAKING PROCESS WITHIN A COMMUNITY, AND IDEALLY LEADS TO EDUCATIONAL AND SOCIAL TRANSFORMATION (KEMMIS, 2010). FOR NOFFKE (2009) THESE THREE DIMENSIONS ARE INTERCONNECTED, HOWEVER RESEARCHERS TEND TO FOCUS ON A SINGLE ASPECT.

THE INTEGRATION OF THESE DIMENSIONS IS WHAT MAKES ACTION RESEARCH PARTICULARLY RELEVANT AND TRANSFORMATIONAL IN THE EXPLORATION OF SUSTAINABILITY BECAUSE OF THE DIFFERENT INTERPRETATIONS AND COMPLEXITY OF THE TERM (MARSHALL ET AL., 2008). THE EMANCIPATORY OR CRITICAL APPROACH CONSCIOUSLY EXPLORES THE RELATIONSHIP BETWEEN THESE THREE DIMENSIONS (CARR AND KEMMIS, 1986). ACQUIRING A DIALOGUE AND A SELF-CRITICAL POSITION IN RELATION TO REAL PROBLEMS OF PRACTICE CAN LEAD TO NEW INSIGHTS AND WAYS OF EMBEDDING SUSTAINABILITY HOLISTICALLY IN THE CURRICULUM. IT CAN ALSO POTENTIALLY LEAD TO EDUCATIONAL AND SOCIAL CHANGE. FOR THIS REASON, EMANCIPATORY ACTION RESEARCH (EAR), PLACED IN THE CRITICAL PARADIGM, BRINGS ABOUT PERSONAL, PROFESSIONAL AND ORGANISATIONAL LEARNING TOWARDS CURRICULUM DEVELOPMENT IN EFS (CEBRIÁN ET AL., 2012; CEBRIÁN ET AL., 2015).

MOREOVER, A USEFUL DIFFERENTIATION IS MADE BETWEEN FIRST, SECOND AND THIRD ORDER (OR ORDER) ACTION RESEARCH (REASON AND BRADBURY, 2008; MARSHALL ET AL., 2011).

(BAMBINO, 2002). CRITICAL FRIENDS, BEING EXTERNAL ADVISERS (KEMBER ET AL., PEERS (FULCHER AND PAULL, 2010), HAVE BEEN USED IN HE TO FACILITATE ACTION RESEARCH PROJECTS TO IMPROVE PROFESSIONAL PRACTICE OF ACADEMIC STAFF MEMBERS. CRITICAL FRIENDS ARE KEY AGENTS FOR ORGANISATIONS THAT SEE THEMSELVES AS LEARNING ORGANISATIONS (SENGE, 2006) BECAUSE OF THEIR ABILITY TO FOSTER REFLECTION AND IMPROVEMENT.

CRITICAL FRIENDS FACE A NUMBER OF CHALLENGES INCLUDING EFFECTIVE COMMUNITY OWNERSHIP OF THE PROJECT, POWER RELATIONS; TIME CONSTRAINTS; TYPE OF SUPPORT AND INTERPERSONAL RELATIONSHIPS (PETTIGREW, 2003; TILBURY ET AL., 2004). BECOMING A POLITICAL ENTREPRENEUR (BUCHANAN AND BADHAM, 2008) IS IMPORTANT AND INVOLVES ADOPTING DIFFERENT STRATEGIES AND DIPLOMACIES TO WORK WITH PARTICIPANTS AND ACQUIRING A CRITICAL REFLECTIVE POSITION IN RELATION TO THE POSITION OF DIFFERENT STAKEHOLDERS. BUCHANAN AND BADHAM (2008) SUGGEST THAT MANAGING THIS POLITICAL ROLE INVOLVES PERFORMING AND BACK STAGING. PERFORMING AND PURSUING THE CHANGE PROCESS AGENDA INVOLVES BEING PRO-ACTIVE AND FACILITATING PARTICIPATION FOR CHANGE, WHILE BACK STAGING REQUIRES SKILLS THAT ENABLE NEGOTIATION, JUSTIFICATION AND INFLUENCE. CRITICAL FRIENDS MUST MEDiate AND INTERACT WITHIN THE EXISTING CULTURE AND POLITICS OF THE ORGANISATION.

THE RESEARCH CONTEXT

THE UNIVERSITY OF SOUTHAMPTON IS LOCATED IN THE SOUTH EAST REGION OF THE UNITED KINGDOM (UK). IT IS ONE OF THE TOP-RESEARCH UNIVERSITIES IN THE UK AND IS A MEMBER OF THE RUSSELL GROUP. IT HAS OVER 22,000 STUDENTS AND AROUND 5,000 STAFF MEMBERS. THE PROFILE OF SUSTAINABILITY AT THE UNIVERSITY OF SOUTHAMPTON HAS INCREASED OVER RECENT YEARS. SOME INDICATIONS OF THIS ARE THE CREATION OF A UNIVERSITY SCHOOL OF PHD FOCUSING ON EFS, WHILST THE INSTITUTION ALSO SUPPORTS A GROUP OF PRACTITIONERS ENGAGED IN THE HIGHER EDUCATION ACADEMY (HEA) GREEN ACADEMY PROGRAMME 'CURRICULA FOR TOMORROW'. THE HEA GREEN ACADEMY PROGRAMME IS AN INNOVATIVE PROGRAMME LAUNCHED BY THE HEA EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) PROJECT ASSOCIATION WITH THE ENVIRONMENTAL ASSOCIATION FOR UNIVERSITIES AND COLLEGES (EAUC) AND THE NATIONAL UNION OF STUDENTS (NUS). THE MAIN AIM OF THIS PROGRAMME IS TO HELP INSTITUTIONS ACHIEVE SUSTAINABILITY IN THEIR CURRICULUM GOALS (KEMP ET AL., MCCOSHAN AND MARTIN, 2012).

THE HEA GREEN ACADEMY INSTITUTIONAL CHANGE PROGRAMME HAS PROVIDED EVIDENCE OF SIGNIFICANT INSTITUTIONAL CHANGE ACROSS THE HEIS THAT PARTICIPATED IN THE PROGRAMME (MCCOSHAN AND MARTIN, 2012). THESE INSTITUTIONS WERE: CANTELUCCI CHRIST CHURCH UNIVERSITY, KEELE UNIVERSITY, THE UNIVERSITY OF NOTTINGHAM, SWANSEA UNIVERSITY, THE UNIVERSITY OF WALES TRINITY SAINT DAVID, THE UNIVERSITY OF WORCESTER

FEATURES AND CONDITIONS OF THE CRITICAL FRIEND ROLE AND THE PROCESS OF ENGAGEMENT WERE AGREED WITH THE PROGRAMME LEADER DURING INFORMAL INTERACTIONS AND MET WITH THE GROUP BEFORE THE START OF THE RESEARCH. THESE WERE THEN SHARED WITH THE GROUP IN ORDER TO GAIN INFORMED CONSENT FROM THE DIFFERENT MEMBERS WILLING TO PARTICIPATE. THE GROUP WAS MADE UP OF SIX PEOPLE REPRESENTING DIFFERENT AREAS OF UNIVERSITY OPERATIONS AND WITH DIFFERENT RESPONSIBILITIES. THE MAJORITY SHARED AN ENVIRONMENT-RELATED BACKGROUND, COMING FROM ENVIRONMENTAL SCIENCES, GEOGRAPHY OR BIOLOGY. PARTICIPANTS' ROLES WITHIN THE UNIVERSITY INCLUDED A STAFF MEMBER, LECTURER, TEACHING ASSISTANT, UNDERGRADUATE STUDENT AND SENIOR MANAGER. PARTICIPANTS HELD SPECIFIC ROLES AND RESPONSIBILITIES WITHIN THE GROUP SUCH AS PROGRAMME ASSISTANT, PROGRAMME LEADER, ENVIRONMENTAL MANAGER AND STUDENT REPRESENTATIVE. THIS GROUP WAS PARTICULARLY VALUABLE TO THE RESEARCH BECAUSE OF THE INVOLVEMENT OF ACADEMICS, STUDENTS, A STAFF MEMBER AND THE ENVIRONMENTAL MANAGER OF THE UNIVERSITY ON A REAL TIME CHANGE PROGRAMME.

A TOTAL OF THREE ONE-HOUR INDIVIDUAL INTERVIEWS AND TWO TWO-HOUR REFLECTIVE SESSIONS WERE CONDUCTED, AND OBSERVATIONS THAT COULD INFORM REFLECTIVE SESSIONS CONDUCTED WITH THE GROUP. TABLE 1 MAPS THE FOCUS OF EACH INDIVIDUAL INTERVIEW CONDUCTED.

| | |
|--------------------|---|
| Interview 1 | <i>Gain a deep understanding of the context and conditions under which the Green Academy Programme was operating. Find out initial successes, challenges and opportunities faced, and the desired outcomes, aims, and expectations.</i> |
| Interview 2 | <i>The members of the Green Academy Programme had the opportunity to reflect upon the process so far. What has happened since the last meeting and what are the current challenges, successes and opportunities.</i> |
| Interview 3 | <i>Focused on the process and evaluation of the programme so far, the key achievements and remaining challenges, and the identification of opportunities and future insights.</i> |

Table 1. The focus of individual interviews

THE TWO REFLECTIVE SESSIONS CONDUCTED FOCUSED ON SHARING THE INSIGHTS OF THE CRITICAL FRIEND AND GIVING FEEDBACK, MIRRORING DATA AND HELPING THE GROUP REFLECT AND LEARN ON ISSUES RELATED TO EFS, THE CURRICULUM AND ORGANISATIONAL DEVELOPMENT. FEEDBACK DOCUMENTS WERE SHARED WITH THE GROUP DURING THE RESEARCH PROCESS. THESE WERE BRIEF SUMMARY DOCUMENTS ON EMERGING THEMES AND KEY FINDINGS FROM PREVIOUS INTERVIEWS AND FROM THE RESEARCH, RESEARCH PAPERS AND OTHER RELEVANT DOCUMENTATION RELATED TO EFS AND ORGANISATIONAL CHANGE. SO FOR EXAMPLE, THREE DAYS

TION WAS MADE EVIDENT WHEN SHARING THE LEARNING ORGANISATIONAL IDEAL. ALTHOUGH THERE WERE SENIOR STAFF MEMBERS IN THE GROUP, THEY FELT DISEMPOWERED TO CHANGE HAPPEN IN THE ORGANISATION. ONE PARTICIPANT STRESSED THAT:

“I think that’s too big for anything that we’re trying to do and anything we could do as a group, I think that’s something which is more systemic across the whole organisation, only then I think it’s possible” (BOB - RS1)

DISCUSSION: THE MAIN CHALLENGES AND OPPORTUNITIES FACED

REFLECTION IS NECESSARY IN BECOMING A REFLECTIVE PRACTITIONER AND TO ENHANCE THE VALIDITY AND QUALITY OF THE RESEARCH (SOMEKH, 2006). IN THIS STUDY, EMANCIPATION WAS UNDERSTOOD AS LIBERATING PARTICIPANTS FROM PREVIOUS KNOWLEDGE AND POWER IS WITHIN THE ORGANISATION THAT MIGHT CONSTRICT EFS PRACTICE. REFLECTIVE SESSIONS WERE USED AS THEY ALLOWED PARTICIPANTS TO EXPLORE AND REFRAME CURRENT ASSUMPTIONS AND PRACTICES IN EFS. HOWEVER THESE SESSIONS CONTRIBUTED TO CRITICAL REFLECTION AS PARTICIPANTS, EXISTING ORGANISATIONAL CONDITIONS AND DYNAMICS COULD HINDER PARTICIPANTS’ EMANCIPATION OR EMPOWERMENT.

EXPECTATIONS OF THE CRITICAL FRIEND ROLE DIFFERED AMONGST PARTICIPANTS. SO FOR ONE PARTICIPANT STATED THAT ‘I EXPECTED YOU TO BE MORE CRITICAL’. HOWEVER BEING MORE CRITICAL WAS DIFFICULT AS THE CRITICAL FRIEND FELT POWERLESS IN THE FACE OF THE HIERARCHIES OF THE ACADEMICS, THEIR STRONGLY HELD-VIEWS AND THEIR EXPERTISE AND EXPERIENCE IN ACADEMIA. THE FOLLOWING RESEARCH MEMO SHOWS THAT A SENSE OF PROTECTIVENESS WAS FELT WHICH DISEMPOWERED HER FROM BEING MORE CRITICAL:

“It’s been very challenging... because there’s a power relationship issue between myself, being a PhD student, and my participants, being professors and experienced in lecturing at universities” [RESEARCHER MEMO 15-04-2013]

BEING A PHD STUDENT WITH LESS POWER IN THE ORGANISATION AND LESS ACADEMIC EXPERIENCE HINDERED HER ROLE AS A CRITICAL FRIEND. AS POINTED OUT BY OTHER RESEARCHERS (PETTIGREW, 2003; GAVENTA AND CORNWALL, 2008), BALANCING POWER RELATIONSHIPS IS A CRITICAL SKILL FOR ACTION RESEARCHERS TO ENABLE THEM TO CREATE DEMOCRATIC PARTNERSHIPS. ACCORDING TO OTHER ACTION RESEARCH FACILITATORS (BUCHANAN AND BADHAM, 2003; PETTIGREW, 2003) FLEXIBILITY AND THE DEVELOPMENT OF STRATEGIES AND DIPLOMACIES TO WORK WITH PEOPLE HOLDING DIFFERENT VALUES AND WORLDVIEWS ARE NEEDED. SEVERAL AUTHORS HAVE MADE REFERENCE TO THE DIFFERENT ROLES FACILITATORS NEED TO PLAY TO FULFIL PARTICIPANTS’ EXPECTATIONS AND ACHIEVE THE RESEARCH GOALS (KEMBER ET AL., 1997; TILBY

OTHERS. POLITICAL STRATEGIES, PERFORMING AND BACK STAGING, BEING ACTIVE, AND BUILDING COLLABORATION, BUT ALSO BEING ABLE TO INTERACT WITH THE EXISTING CULTURAL AND POLITICAL SYSTEM, ARE CRITICAL (BUCHANAN AND BADHAM, 2008). IT IS ABOUT BEING POLITICALLY ACTIVE WHILST STILL ENSURING AN ETHICAL PRACTICE (COGHLAN AND BRANNICK, 2005). BUILDING TRUST AND RAPPORT WAS KEY TO ESTABLISHING THIS RELATIONSHIP AND TO PERFORMING THE ROLE OF A CRITICAL FRIEND. OTHERS (KEMBER & ASSOCIATES, 2000) HAVE HIGHLIGHTED MUTUAL TRUST AND RAPPORT AS PREPARATORY STEPS TO FACILITATING ACTION RESEARCH. CRITICAL FRIENDS NEED TO DEVELOP INTERPERSONAL CAPABILITIES SUCH AS INFLUENCING AND EMPHASISING (FURNIVALL AND SCOTT, 2009), BUILDING TRUST AND RAPPORT AND COLLABORATION THROUGH INTERACTION WITH THE EXISTING CULTURAL AND POLITICAL SYSTEM (BUCHANAN AND BADHAM, 2008). FLEXIBILITY IN THE APPROACH AND IN THE DIFFERENT ROLES ADOPTED IS INTRINSIC QUALITY OF CRITICAL FRIENDS (KEMBER ET AL., 1997).

CONCLUSION

THIS CHAPTER SHOWS THE CONTRIBUTION OF CRITICAL FRIENDS AND SECOND-ORDER ACTION RESEARCH IN ACTING AS A CATALYST FOR CRITICAL REFLECTION, CREATING A SHARED VISION AND SUPPORTING LEARNING AND ACTION WITHIN COMMUNITIES OF PRACTICE OR TEAMS WORKING TOWARDS EMBEDDING SUSTAINABILITY WITHIN HE. THE STUDY SUGGESTS THAT MORE EMPIRICAL RESEARCH USING SECOND-ORDER ACTION RESEARCH APPROACHES IS NEEDED TO EXPLORE AND FOSTER NEW UNDERSTANDINGS OF, AND ORGANISATIONAL CHANGE TOWARDS, EFS, AND PARTICIPATORY AND EMANCIPATORY APPROACHES, SUCH AS ACTION RESEARCH, CAN FOSTER TRANSFORMATION AND LEARNING.

THE CRITICAL FRIEND ROLE HAS ENABLED REFLECTION AND ACTION, TOGETHER WITH THE IDENTIFICATION OF SPECIFIC NEEDS OF THE MEMBERS OF THE PROGRAMME AND THE FACILITATION OF INFLUENCING THEIR ENGAGEMENT AND ACTION. THIS RESEARCH HAS DEMONSTRATED THE POTENTIAL OF USING THESE APPROACHES TO RETHINK CURRENT PRACTICE IN EMBEDDING SUSTAINABILITY AND TO LEAD TO NEW PRACTICES AND ACTIONS OF THE STUDIED COMMUNITIES OF PRACTICE. THE CRITICAL FRIEND ROLE AND SECOND-ORDER ACTION RESEARCH CAN CONTRIBUTE TO BETTER DECISION-MAKING IN TERMS OF SUSTAINABILITY BECAUSE IT QUESTIONS PRACTICE, CHALLENGES CURRENT ASSUMPTIONS AND WORLDVIEWS. THE FINDINGS OF THIS STUDY HAVE SHOWN THE VALUE OF ACTION RESEARCH IN OPENING UP COMMUNICATIVE SPACE AND ACTION (CARR AND KEMPER, 1986; 2009) ALLOWING THE TEAM TO SEE THE CHALLENGES AND OPPORTUNITIES THEY FACE WHILE CONTRIBUTING TO REFLECTION-IN-PRACTICE. THROUGH THESE PROCESSES AND PRACTICES UNIVERSITY TEAMS AND MEMBERS CAN DEVELOP NEW WAYS OF UNDERSTANDING, AND NEW PRACTICES FOR EMBEDDING EFS WITHIN THEIR PROFESSIONAL PRACTICE AND WITHIN THE ORGANISATION. THIS TYPE OF RESEARCH AND PROCESS CAN LEAD THE LEARNING OF INDIVIDUALS AND WIDER ORGANISATIONAL LEARNING AND CHANGE TOWARDS EMBEDDING SUSTAINABILITY.

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IN THIS SMALL CASE STUDY WE WANT TO SHOW THAT THIS DIVERSITY BEARS ALSO SOME OF THE OBJECT OF OUR CASE STUDY IS A GRADUATE SCHOOL FOR ENVIRONMENTAL EDUCATION IN KOREA, WHERE STUDENTS WORK UNDER THE SUPERVISION OF FACULTIES FROM DIFFERENT DISCIPLINES. ON THE ONE HAND, THIS MULTIPLICITY OF EPISTEMOLOGICAL FOUNDATIONS AND A VARIETY OF CONCEPTS OF SUSTAINABILITY CAN BE SEEN ALSO AS A FREE CHOICE OF UNDERSTANDING OF THE RESPECTIVE RESEARCHERS (MCKEOWN & HOPKINS, 2003). ON THE OTHER HAND, SUSTAINABILITY IS A CONFUSING AND CONTESTED NOTION ALREADY, WHICH HAS BEEN DEFINED IN MANY DIFFERENT WAYS REFLECTING THEORETICAL FOUNDATIONS (BOOGAARD ET AL., 2009). THESE DIFFERENCES CHALLENGE HIGHER EDUCATION INSTITUTES IN THEIR RALLY TO INTENSIFY SUSTAINABILITY UNDER THEIR BANNER (COTTON ET AL., 2009).

HIGHER ENVIRONMENTAL EDUCATION AND SUSTAINABILITY

UNIVERSITIES WORLDWIDE PROMOTED STEPS FOR CREATING MORE SUSTAINABLE CURRICULA (WALS, 2014). BASED ON A NUMBER OF INTERNATIONAL DECLARATIONS – AMONG THOSE THE THESSALONIKI DECLARATION (IAU, 2006) – UNIVERSITIES COMMITTED TO ADDRESS ENVIRONMENTAL ISSUES AND SUSTAINABLE DEVELOPMENT (SD) IN THEIR DISCIPLINES' CURRICULAR RESEARCH (WRIGHT, 2002).

LOZANO ET AL. (2013) ANALYSED THE 24 DECLARATIONS, CHARTERS, AND PARTNERSHIPS DEVELOPED TO FOSTER SD FROM 1972 TO 2009 AND IDENTIFIED THREE LEVELS: SOCIETY, EDUCATION AND HIGHER EDUCATION, SHOWING THE EVOLUTION OF THESE INITIATIVES. THEY POINT OUT THAT DESPITE A NUMBER OF INITIATIVES AND EFFORTS TO ENGAGE WITH SD, UNIVERSITIES HAVE ADHERED TO TRADITIONAL "NEWTONIAN AND CARTESIAN MENTAL MODELS (P. 10). THEY SUGGEST THAT MULTI-DISCIPLINARY EDUCATION AND RESEARCH IS NEEDED TO ACCOMPLISH SOCIETAL TRANSFORMATIONS TO SD IN UNIVERSITIES.

SIMILARLY, A GREAT FOCUS IN LITERATURE ON HESD EMPHASIZES TO TEACH AND TO LEARN ABOUT THESE ENDEAVOURS ARE LIMITED TO SCIENTIFIC OR ECONOMIC ACTIVITIES LIKE THE COMING OF AN AGRO-FOOD SYSTEM, FINDING ALTERNATIVES TO TOXIC CHEMICALS, ASSESSING ECOLOGICAL FOOTPRINTS, SHIFTING TOWARDS FAIR-TRADE COFFEE (CORTESE, 2003). WITH THESE ACTIVITIES UNIVERSITIES WANT TO ENGAGE STUDENTS IN UNDERSTANDING SUSTAINABILITY (EVERETT, 2008). HOWEVER, FEW EXAMPLES ONLY SHOW HOW ON-GOING RESEARCH – IN PARTICULAR FOR MASTER AND PHD THESES - ARTICULATE NEW AND HIGHLY DIVERSE CONCEPTS AND THEORIES BY OBSERVING FUNDAMENTAL TRANSFORMATIONS WHICH ARE TAKING PLACE IN SOCIETY (POECK & VANDENBERG, 2012). BASED ON A SMALL CROATIAN CASE STUDY, ŠTIGANJAN ET AL. (2014) RECOMMEND THAT BACHELOR'S AND MASTER THESES IN THEIR FACULTY ARE AMONG OTHERS AN IMPORTANT MEASURE TO REORIENT TEACHER EDUCATION TOWARDS SUSTAINABILITY.

CONSTRUCTIVE DIVERSITY OF CONCEPTS. THE FUZZY MULTIPLICITY MIGHT CAUSE AN INHERENT AMBIGUITY OF THE CONCEPT OF SD WHICH RESULTS IN AN ILL-DEFINED CONSENSUS BUT LEADS TO CONFLICTS INSTEAD OF COMMON VISIONS AND JOINT ACTIONS (SHERREN ET AL., 2011).

WRITING THESES AND SUSTAINABILITY CONCEPTS

NOTABLY, MANY UNIVERSITIES REQUIRE STUDENTS TO COMPLETE A DISSERTATION IN ORDER TO GRADUATE AND APPLY FOR A SCHOLARSHIP (PATTON, 2001). IT IS A RITE OF PASSAGE INTO A STUDENT'S CHOSEN FIELD (MARCINKOWSKI ET AL., 2013). HOWEVER, SINCE THE EARLY 1990S, ENVIRONMENTAL EDUCATION RESEARCH HAS LIMITED ATTENTION TO DISSERTATION RESEARCH. NONETHELESS, A REVIEW OF DISSERTATIONS CAN HELP IDENTIFY ACADEMIC COMMUNITIES WHERE STUDENTS HAVE BEEN SOCIALIZED AND INDUCTED. PROBABLY, AS STEVENSON (2007) ARGUED, THE DISCOURSE-PRACTICE GAP IS ATTRIBUTED TO ABSENCE OF THE DISCOURSE-PRACTICE FOR ENVIRONMENTAL EDUCATION RESEARCH WITHIN SCHOLARLY GROUPS, PRACTICING EDUCATIONAL PRACTITIONERS, AND "FUZZY CONTOURS" (GONZÁLEZ-GAUDIANO, 2006). RESEARCH HAS FAILED TO IDENTIFY "EITHER THE PRINCIPAL TASKS OR THE KEY CONCEPTS AND METHODS. PARTICULARLY, THE ENVIRONMENTAL EDUCATION POLICY-MAKERS AND ACADEMIC COMMUNITIES HAVE NOT ENOUGH TO CONSIDER PEDAGOGY (HART, 1993), BECAUSE OF THIS, PRINCIPAL TASKS FRAME THE SUSTAINABILITY DISCOURSE CANNOT BE CONNECTED TO PEDAGOGICAL PRACTICE (STEVENSON, 2007).

ESD in the Korean case

THE DECISION TO CONDUCT THIS CASE STUDY ABOUT KOREAN TEACHER EDUCATION RESEARCH APPEARS SEEMS WORTHWHILE, BECAUSE ENVIRONMENTAL EDUCATION IS A SCHOOL SUBJECT IN KOREA WITH A COMPREHENSIVE CURRICULUM FOR ALL SCHOOL TYPES AND AGES. UNDER THE GOVERNMENT'S PLAN, ESD WAS CHOSEN AS ONE OF THE CROSS-CURRICULAR THEMES. THE GENERAL GUIDELINES OF THE NATIONAL CURRICULUM REVISED IN 2007 AND 2009 AND RECENTLY EMPHASIZED IN THE CURRICULUM OF LOCAL EDUCATIONAL OFFICES AND SCHOOLS FROM TIME TO TIME (LEE ET AL., 2013).

KOREAN ESD DEFINITIONS HAD BEEN BASED ON PRESIDENTIAL COMMISSION ON SUSTAINABLE DEVELOPMENT (PCSD)'S IMPLEMENTATION COMMITTEE. PCSD DEVELOPED THE UN DESD IMPLEMENTATION STRATEGY IN 2005; ANNOUNCED THE RELATED PLANS IN 2006; ENACTED AND PROMULGATED THE BASIC ACT FOR SD IN 2007; AND FINALLY ESTABLISHED THE ENVIRONMENTAL EDUCATION PROMOTION ACT IN 2008. THESE ENDEAVOURS SET UP THE BASIC FRAMEWORK FOR ESD AS A HIGH QUALITY EDUCATION ABOUT VALUES, BEHAVIOURS AND LIFESTYLES FOR A SUSTAINABLE FUTURE AND SOCIAL TRANSFORMATION (PCSD, 2006).

KOREA'S ESD CAN BE GENERALLY CATEGORIZED INTO THE FOLLOWING THREE PHASES IN

MENT”, “EDUCATION FOR SUSTAINABLE DEVELOPMENT”, AND FOUND THE TOTAL NUMBER OF THESE SUBMITTED AND APPROVED IN THE RESPECTIVE PERIOD OF DESD. BUT ONLY 7 ENTRIES IDENTIFIED THE NOTIONS CORRESPONDING THE DESCRIPTORS APPEARING IN THE TOPIC OF THE DISSERTATION ABSTRACTS (SEE THE TABLE).

| Degree | Author (Date) | Keywords | Title |
|---------------|------------------------|---|--|
| Master | Park, Deok-Soon (2007) | Love Earth Il-Chon Program, middle-school students, pro-environmental behavior, teachers mini-homepage | (The)Effect on students' pro-environmental behavior change through the environmental education by using a teacher's mini-homepage |
| Ph.D | Cho, Eun-jeong (2008) | community building, residents-participatory community revitalization, social network, sense of place, place identity, adult environmental education, practical knowledge, learning community, environmental justice | A study on the Implication of Community Building in Environmental Education |
| Ph.D | Eom, Eun-Hui (2008) | neoliberalization of the environment, globalization from below, the Philippines, RapuRapu Project, mining industry, political ecology, environmental justice, ESD | Neoliberalization of the environment and the changes of the third world environment : political ecology of the RapuRapu mining project in the Philippines |
| Master | Kim, Tae-Yeon (2013) | identity, adult learning, sustainable human development, docent, narrative research | Exploring transformation of adults' identity in view of learning as sustainable development : a narrative research on becoming a docent in a natural history museum |
| Ph.D | Seo, Eun-Jung (2014) | environmental curriculum in secondary school, environmental curriculum perspective, environmental education, key competencies, competence-based curriculum, delphi method, quantitative research | The Study of Key Competencies and the Epistemological Perspective in Secondary School Environmental Studies Curriculums |
| Master | Nam, Mi-Ri (2014) | proverbs, Traditional Ecological Knowledge(TEK), environmental lesson, analogical thinking, schema theory, experimental study | The effect of the proverb in traditional ecological knowledge lesson on elementary school students analogical thinking |
| Master | Cho, Yoo-Ri (2014) | biophilia, biophobia, connectedness to nature, environmental disgust sensitivity, private-public partnership for experiential environmental education, honey bee | An investigation into elementary school students' environmental disgust sensitivity and connectedness to nature using the case of a honey bee experiential education program |

TABLE. THE 7 THESES FOR ANALYSIS

INTERPRETATIVE RESEARCH PARADIGM. SHE MENTIONED “ENVIRONMENT IS NOT A SE
ON WITH US BUT THE MEDIUM THAT WE ACQUIRE IDENTITY FROM AND PARTICIPATE IN” (P
180). AND FOR EDUCATION, SHE INSISTED “WE NEED THE CONSTRUCTIVE APPROACH” TO
STUDENT-CENTERED LEARNING. HENCE, SHE CONTEMPLATED THE MEANING OF THE RESID
PARTICIPATORY COMMUNITY BUILDING IN ENVIRONMENTAL EDUCATION. THIS INTENTION V
SIMILAR TO KIM (2013)’S RESEARCH BECAUSE SHE REVEALED THE DOCENTS IN A M
WITH THE VIEW OF LEARNING AS SUSTAINABLE DEVELOPMENT AS CALLED “ESD 2” (S
SCOTT, 2008). THE ALTERNATIVE CONCEPT OF LEARNING AS SUSTAINABLE DEVELOPMEN
PROPOSED AS A DIFFERENT VIEW OF WHAT SD COULD BE. AS FOSTER (2002) ARGUED SD
ITSELF A SOCIAL LEARNING PROCESS TO IMPROVE THE LIFE CONDITIONS OF PEOPLE.

MOREOVER, EOM (2008) CLAIMED THAT CURRENT KOREA’S HIGH-DEPENDENT INDUSTRIAL
VELOPMENT STRATEGIES SHOULD BE RECONSIDERED TO ACHIEVE SUSTAINABILITY CONSI
THE LIMIT OF ENVIRONMENT. HENCE, SHE THOUGHT ESD IS POSSIBLE THROUGH “RE
LEARNING (P. 224)” CHARACTERIZED FORMATIVE AND TRANSFORMATIVE PROCESSES TO
PEOPLE TO TRANSFORM ENVIRONMENTAL AND SOCIAL CONDITIONS BASED ON THE CRITIC
DIGM. HUCKLE (1997) MENTIONED THAT CONTESTED MEANINGS OF SUSTAINABILITY LET P
ACT AND REFLECT ON THESE MEANINGS, SO IT MIGHT BE POSSIBLE TO MAKE ALTER
FUTURES IN MORE DEMOCRATIC WAY.

CONCLUSIONS

THE CASE OF AN ENVIRONMENTAL EDUCATION GRADUATE SCHOOL SHOWED THAT ONLY 7
62 ACADEMIC GRADUATES EMBRACED THE NOTION SUSTAINABILITY IN THEIR THESIS RESE
ALTHOUGH THEY SHOW THEIR EXPERTISE IN SPECIALIZED FIELDS OF ENVIRONMENTAL ISS
PARTICULAR REASON FOR MOST HIGHER EDUCATION STUDENTS IN KOREA MIGHT BE THAT
NEVER RECEIVED ANY ESD, EVEN THOUGH THEY LEARNED SD IN MIDDLE SCHOOL OR HIGH
(LEE ET AL. 2006). DESD IN KOREA HAS BEEN SUPPORTED BY A VARIETY OF SECTORS. TH
ENDEAVOURS TO SPREAD ESD-RELATED PERFORMANCES TO THE SCHOOLS OR UNIVERS
A WHOLE HAVE EXPANDED IN QUANTITY BUT SUBSTANTIAL PROGRESS IN QUALITY HAS YET
BEEN FULLY ACHIEVED (LEE ET AL. 2013).

IT SEEMS CRUCIAL IN TIME OF THE INTERNATIONAL ORIENTATION ON SUSTAINABLE DEVELO
THAT ALL THE ENVIRONMENTAL EDUCATION THESES REQUIRE AN APPROPRIATE FOUNDAT
THE LIGHT OF SUSTAINABILITY. BUT STILL MISUNDERSTANDINGS OF SUSTAINABILITY EXTER
THE SOCIETY TO HIGHER EDUCATION (SHRIBERG, 2002). BECAUSE ENVIRONMENTAL SCIE
ARE STILL THE MAJOR PLACE FOR STUDIES ABOUT SUSTAINABLE DEVELOPMENT (REID AN
2005) THE FOCUS OF SUSTAINABILITY LAYS STILL ON UNDERSTANDING THE ENVIRONMEN
THAN THE WAY HUMANS INTERACT WITH IT.

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EVALUATING EDUCATION FOR SUSTAINABLE DEVELOPMENT PROGRAMMES CONSISTENT WITH EDUCATION FOR SUSTAINABLE DEVELOPMENT: A CHALLENGE FOR EVALUATORS

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AbSTRACT

EVALUATION HAS BEEN A MAJOR CHALLENGE FOR ENVIRONMENTAL EDUCATION AND FOR EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD). WHILE NATIONAL AND INTERNATIONAL FUNDING FAVOURS A KIND OF EVALUATION THAT COULD BE DEFINED AS ‘POSITIVISTIC’ CONCERNED WITH QUANTITY THAN QUALITY, ESD RESEARCH ASKS FOR A PARADIGM AND METHODOLOGY THAT ARE MORE CONSISTENT WITH ITS VALUES. COMPLEXITY, SYSTEMIC THINKING, PARTICIPATION AND COLLABORATION ARE SOME OF THE MANY KEY CONSTRUCTS THAT ACCOMPANY EDUCATIONAL RESEARCH ON ESD AND WHICH NEED TO BE TAKEN INTO CONSIDERATION IN STRATEGIES FOR EVALUATION.

FROM THE BEGINNING OF ITS LIFE, THE ENSI NETWORK EXPLORED DIFFERENT RESEARCH APPROACHES FOR AN EVALUATION CONSISTENT WITH THE RESEARCH AND INNOVATION ASKED FOR. DRAWING ON EUROPEAN PROJECTS SEED, SUPPORT AND CODES, THIS CHAPTER DISCUSSES A RESEARCH ARENA FOR EXPERIMENTING WITH EVALUATION THAT TAKES INTO ACCOUNT NOT JUST PRODUCTS BUT ALSO PROCESSES, NOT ONLY FACTS AND CONCRETE OUTCOMES BUT ALSO THE PROCESS OF COMMUNITY BUILDING, TOGETHER WITH THE QUALITY OF THE ‘INTERNAL LEARNING’ OF THE NETWORKS THEMSELVES CONSIDERED AS ‘LEARNING ORGANISATIONS’.

KEYWORDS

FRONTSTAGE AND BACKSTAGE, LEARNING ORGANISATION, PROJECT EVALUATION, QUALITY IMPROVEMENT

‘It has often been said that scientific explanation lies in explaining what is complex and visible by referring to what is simple and invisible. But in this way, it would completely dissolve all that is complex and visible, while it is also the complex and visible with which we must deal’ (Morin, 1985).

AND THE RESULTS OBTAINED. IN THIS SITUATION, THE EVALUATION OF A PROGRAMM CONFLICT WITH THE NEEDS FOR FORMATIVE DEVELOPMENT AND QUALITY ENHANCEMENT ARE CONSISTENT WITH THE MAIN AIMS OF ESD.

ENSI'S VISION AND METHODOLOGIES INSPIRED THE PARADIGM USED FOR EVALUATING THE PROJECTS IN THE EUROPEAN UNION COMENIUS/LIFE-LONG LEARNING PROGRAMMES: (TILBURY ET AL. 2005), SUPPORT (MAYER, 2010) AND CODES (DILLON, 2014). THE PARADIGM THAT WAS EXPLICITLY ACCEPTED FOR THE EVALUATION FRAMEWORK WAS 'SOCIO-CRITICAL' (TOM AND HART, 1993) IN CONTRAST NOT ONLY WITH THE POSITIVISTIC PARADIGM BUT ALSO WITH THE RELATIVISTIC/INTERPRETATIVE ONE INSPIRED BY POST-MODERN CRITICISM (FLOGAITHI AND LIARAKOU, 2000). IN ENSI'S VISION, EVALUATION IS A 'TRANSFORMATIVE' PROCESS, ACCORDING TO THE ESD IDEA OF 'TRANSFORMATIVE LEARNING' AND IN ORDER TO BRING ABOUT CHANGE IT DEALS WITH PROCESSES AND NOT ONLY WITH RESULTS. IN THE SOCIO-CRITICAL PARADIGM EVALUATION IS NO LONGER REDUCED TO AN ASSESSMENT PROCESS WITH 'DEFINITE' OUTCOMES BUT PROPOSES INSTEAD A REFLEXIVE PROCESS WHICH PROCEEDS THROUGH NEGOTIATING VALUES, SEARCHING FOR QUALITY, TAKING CARE OF UNEXPECTED ISSUES AND CONSTRUCTING MEANING. SUCH AN EVALUATION TRIES TO TAKE ACCOUNT NOT ONLY OF FACTS BUT ALSO OF THE VALUES OF THE PARTICIPANTS, THEIR VISIONS OF ESD AND THE QUALITIES THEY WANT TO BRING ABOUT WITHIN THE PROJECT. THE ROLE OF THE EVALUATORS HAS CHANGED AS WELL: THEY ARE NOT 'OBJECTIVE' OBSERVERS, BUT SOCIAL AGENTS OF CHANGE. THEY BRING THEIR OWN INTERPRETATIONS AND VALUES, WHICH CANNOT BE ELIMINATED BUT RATHER MUST BE MADE EXPLICIT. THIS STRATEGY GIVES ATTENTION TO EMERGENCE AND TO UNEXPECTED AND UNPLANNED EVENTS; THE AIMS ARE TO UNDERSTAND THE ACTIONS AND PROCESSES GOING ON IN ORDER TO PARTICIPATE IN THE DEVELOPMENT AND TO PROPOSE REFLECTIONS AND SCENARIOS IN LINE WITH THE VALUES AND VISIONS. SUCH AN EVALUATION IS CONCERNED WITH THE PROCESSES OF BUILDING COMMUNITIES AND WITH THE PARTNERS' NETWORKS AND WITH THE QUALITY OF THE 'INTERNAL LEARNING' OF THE SCHOOL ITSELF, CONSIDERED AS 'A LEARNING ORGANISATION'.

QUALITY AND EVALUATION: THE QUALITY CRITERIA PROPOSAL

THESE UNDERSTANDINGS OF QUALITY AND EVALUATION RUN COUNTER TO THE LANGUAGE AND CULTURE OF THE EDUCATIONAL EVALUATIONS USED BY POLITICIANS AND ADMINISTRATORS IN EUROPE. 'EVALUATION' HAS BEEN USED AS A TOOL MAINLY FOR EDUCATIONAL CONTROL AND NOT FOR SCHOOL DEVELOPMENT TOWARDS ESD. FOR THIS REASON IT WAS, AND STILL IS, IMPORTANT TO RECONSIDER THE CONCEPT OF EDUCATIONAL QUALITY IN ORDER TO BUILD A NEW MEANING, UNDERSTOOD FOR ALL MEMBERS OF A SCHOOL COMMUNITY, AND CONSISTENT WITH THE IMPORTANCE OF ACCEPTING UNCERTAINTY AND COMPLEXITY AS A PART OF ESD.

IN A CULTURE OF COMPLEXITY, EVALUATION CANNOT REDUCE THE QUALITY OF EDUCATION

2011-2014). WHEN CONFRONTED WITH THE REQUEST FOR EVALUATION BY THE EUROPEAN UNION, THE ENSI VISION HAS BEEN FURTHER ENRICHED AS IS ILLUSTRATED IN THE MOST RECENT CODES.

CODES (COMMUNITY-BASED SCHOOL DEVELOPMENT FOR SUSTAINABILITY) IS A MULTILATERAL NETWORK, A NETWORK OF NETWORKS COMPRISING TWENTY-EIGHT PARTNER ORGANIZATIONS WHOSE WORK FOCUSES ON COLLABORATION BETWEEN SCHOOLS AND COMMUNITIES TO ADDRESS EDUCATION AND ISSUES OF SD. BASED ON THE PARTNERS' WIDE RANGE OF EXPERIENCE, CODES IS AIMED TO IDENTIFY EXEMPLAR CASES OF SCHOOL-COMMUNITY COLLABORATIVE PARTNER COLLABORATION, INVESTIGATE THE FACTORS THAT MADE THEM SUCCESSFUL, AND DEVELOP MODELS, INDICATORS, AND TOOLS TO IMPROVE THE QUALITY OF SUCH COLLABORATIVE EFFORTS. THE CODES NETWORK INCLUDES EXPERTS WHO HAVE DIRECT EXPERIENCE IN THE DEVELOPMENT OF SCHOOL-COMMUNITY COLLABORATION IN ESD AND SD. THEY BRING TO THE NETWORK A STRONG BACKGROUND BASED ON THEIR EXPERIENCES IN DIFFERENT SECTORS: TEACHER EDUCATION, NGOs, RESEARCH, POLICY MAKING, EDUCATIONAL ADMINISTRATION, SCHOOL TEACHING. THIS CONTEXT IS DIVERSE IN TERMS OF STAKEHOLDERS, CULTURAL BACKGROUNDS, AND COUNTRIES AND THEREFORE CODES DEVELOPS METHODOLOGIES THAT RESPECT THE DIVERSITY, ACKNOWLEDGE IT, DEVELOPS ITS THEORETICAL BASE, AND PRODUCE TOOLS TO FACILITATE PRACTICAL APPLICATIONS.

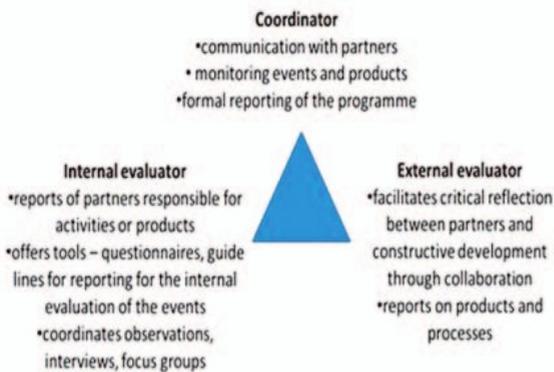


Figure 1. ENSI Quality Assurance System for European Projects

IN CODES, THE WIDELY SHARED IDEA OF AN EXTERNAL EVALUATOR WAS TRANSFORMED INTO A 'SYSTEM FOR QUALITY ASSURANCE AND FOR QUALITY ENHANCEMENT', WHERE DIFFERENT PARTNERS PLAY DIFFERENT ROLES AS SHOWN IN FIGURE 1. THE MONITORING FUNCTION WAS PERFORMED BY THE PROJECT COORDINATOR WHO WAS RESPONSIBLE FOR THE APPROPRIATE USE OF TOOLS AND RESOURCES; THE INTERNAL EVALUATION FUNCTION WAS PERFORMED BY THE

TO CLARIFY AIMS, DEVELOP A COLLECTIVE IDENTITY, REFINE PROCESSES AND PRODUCE AND AGREE STRATEGIES FOR IMPLEMENTATION AND DISSEMINATION (FIGURE 2). THIS APPROACH, COMBINING PROFESSIONAL DEVELOPMENT AND CRITICAL APPRAISAL, HAS BEEN REFINED BY AN EXTERNAL EVALUATOR IN HIS WORK WITH ACADEMICS IN FINLAND (DILLON ET AL. 2014).

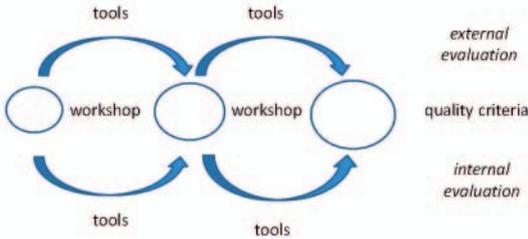


Figure 2. Cumulative evaluation through the project with quality improvement tools

CUMULATIVE EVALUATION WITH QUALITY IMPROVEMENT TOOLS IS ALSO DEVELOPMENT IN THE SENSE THAT AS THE PROJECT PROGRESSES IT ‘CHANGES ITS SHAPE’ THROUGH CHANGING OBJECTIVES AND RE-FOCUSING. ITS INFORMATION BASE ALSO GETS ‘BIGGER’ BECAUSE OF THE PROGRESSIVE ACCUMULATION OF NEW DATA. THIS LEADS TO GREATER UNDERSTANDING OF WHAT THE PROJECT CAN ACHIEVE AND GREATER REFINEMENT OF ITS WORKING METHODS (FIGURE 3).

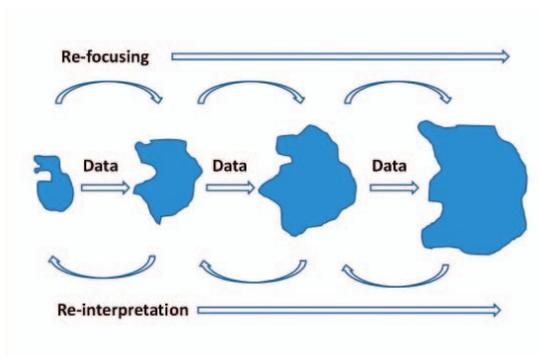


Figure 3. Cumulative development through the adding data, refining methods and re-focussing

CODES. A DEVELOPMENTAL JOURNEY THROUGH EVALUATION

THE CONNECTIONS BETWEEN PROJECT COORDINATION, PARTICIPATORY EVALUATION AND CUMULATIVE DEVELOPMENT WITH QUALITY IMPROVEMENT TOOLS CAN BE ILLUSTRATED THROUGH THE CODES PROJECT HISTORY. IN THE THREE YEARS OF THE PROJECT THERE WERE THREE

THE FIRST CONFERENCE IN VIENNA BROUGHT TOGETHER A WIDE DIVERSITY OF STAKEHOLDERS INVOLVED IN SCHOOL-COMMUNITY COLLABORATION FOR SUSTAINABLE DEVELOPMENT. THE CONFERENCE TOOK STOCK OF 'WHERE WE ARE NOW' WITH SD AND ESD AND EXPLORED SOME IDEAS ABOUT THEORY AND HOW THESE MIGHT TRANSLATE INTO PRACTICE.

THE SECOND PARTNER MEETING WAS HELD IN GYÖR, HUNGARY AND THE EVALUATORS' WORKSHOP FOCUSED ESPECIALLY ON WORKSHOPS AND DISCUSSIONS AROUND THE PROCESS OF EVALUATION. 'COLLABORATION' IS CENTRAL TO ACTIONS REQUIRED TO ADDRESS ESD AND SUSTAINABILITY AND THE APPROACH TO EVALUATION OUTLINED ABOVE.

COLLABORATION WAS SEEN AS:

- NOT SO MUCH DOING THE SAME WORK, BUT RATHER UNDERSTANDING THE WORK OF EACH OTHER ANOTHER SO THAT IDEAS AND PRACTICES CAN BE ADAPTED AND APPLIED ELSEWHERE.
- MORE THAN THE SUM OF THE INDIVIDUAL PARTICIPANTS' CONTRIBUTIONS, THERE IS AN EMERGENT, SHARED KNOWLEDGE (JOINT WORK). IT CANNOT BE REDUCED TO THE SEPARATE KNOWLEDGE OF THE INDIVIDUAL PARTICIPANTS.
- NOT JUST PLANNING, DECIDING AND ACTING JOINTLY BUT ALSO THINKING TOGETHER.
- ITS PRODUCTS REFLECT A BLENDING OF ALL PARTICIPANTS' CONTRIBUTIONS.
- PARTICIPANTS' LISTEN AND DISCUSS/READ AND ANALYSE EACH OTHER'S CONTRIBUTIONS TO IDENTIFY RECURRENT THEMES, MAKE CROSS-SITE COMPARISONS.
- SELECTION, HIGHLIGHTING AND NEGOTIATION OF MEANING OF WHAT IS BEING REPORTED ARE THROUGH PROCESSES OF MUTUAL VALIDATION.

THE MOST IMPORTANT CONDITIONS NECESSARY FOR COLLABORATION IDENTIFIED IN THE WORKSHOP WERE: COMPLEMENTARITIES OF EXPERTISE, SKILLS, EFFORT AND ROLES IN THE GROUP RELATIONSHIPS. FOLLOWING FROM THIS, THERE WAS A COMMITMENT TO SHARED RESOURCES AND POWER: NO INDIVIDUAL'S VIEWS SHOULD DOMINATE; AUTHORITY FOR DECISIONS AND ACTION RESIDES WITH THE GROUP.

AMONGST THE POTENTIAL BARRIERS TO COLLABORATION WERE THE FOLLOWING: CULTURAL DIFFERENCES; CONFLICTING OBJECTIVES; BETWEEN-GROUP DIFFERENCES; DIFFERENCES BETWEEN PARTICIPANTS; RELUCTANT PARTICIPANTS; COMPETING OBLIGATIONS, LOYALTY AND EXPECTATIONS; TIME DEMANDS AND ALLOCATIONS; DIFFERENCES IN WORLDVIEWS; DIFFERENCES IN WORKING METHODS; DIFFICULTIES IN WRITING TOGETHER.

THERE IS NO DEFINITIVE DEFINITION OF COLLABORATION. EACH GROUP FINDS ITS OWN WAY OF WORKING IN WHICH THE FACTORS IDENTIFIED IN OUR WORKSHOP HAVE DIFFERENT LEVELS OF IMPORTANCE (SEE ALSO JOHN-STEINER AND WEBER, 1998). COLLABORATION TAKES DIFFERENT FORMS ACCORDING TO THE OBJECTIVES: E.G. IN PRODUCT-ORIENTATED COLLABORATION

INSTIGATED IN SCHOOLS CAN BE SHOWN TO HAVE HAD AN IMPACT ON SHAPING POLICY AND MORE PROFOUNDLY, ON INFLUENCING THE PRODUCTION PROCESSES OF PRIVATE COMPANIES. THERE IS A NEED TO DEVELOP STRATEGIES FOR ENGAGING POLITICIANS, POLICY MAKERS AND REPRESENTATIVES OF PRIVATE COMPANIES MORE ACTIVELY IN DISCUSSIONS WITH EDUCATIONAL STAKEHOLDERS.

THE FOCUS OF THE THIRD PARTNER MEETING IN LARNACA, CYPRUS WAS DISSEMINATION. THE TASK WAS TO COLLECT THE FEEDBACK ON THE FINISHED PRODUCTS, PLAN THE LAST STEPS OF THE PROJECT, AND AGREE A FRAMEWORK FOR DISSEMINATION. BUT IN ORDER TO DISSEMINATE ACHIEVEMENTS, EVERY MEMBER OF THE NETWORK HAD TO UNDERSTAND AND APPRECIATE THE PRODUCTS PREPARED, AND BE ABLE TO PRESENT THEM CRITICALLY. WHAT SHOULD BE DISSEMINATED, ONLY THE PRODUCTS OR ALSO THE PROCESSES? AND WHAT ARE THE PROCESSES OF DISSEMINATING? WHAT WAS THE 'COLLECTIVE CULTURAL HERITAGE' OF THE CODES PROJECT? HOW SHOULD THE PARTNERS TRANSMIT THIS TO THEIR OWN NETWORKS?

VARIOUS METAPHORS CAN BE APPLIED TO THE PRODUCT-PROCESS ISSUE. ONE SUCH IS GOFFMAN'S (1956) NOTION OF FRONTSTAGE AND BACKSTAGE. IN THE THEATRE, THE FRONT IS WHAT THE AUDIENCE IS FAMILIAR WITH, WHEREAS THE BACKSTAGE, ACCESSED THROUGH THE 'STAGEDOOR', IS RESTRICTED TO THOSE INVOLVED IN THE PRODUCTION. IF ONE WANTS TO DEVELOP AN UNDERSTANDING OF THE THEATRE THE AUDIENCE'S VIEW OF THE FRONTSTAGE IS A GOOD PLACE TO START, BUT IT OFFERS A FAR FROM COMPLETE PICTURE. A BACKSTAGE VIEW IS ALSO REQUIRED. THE FRONT OF CODES IS ITS WEBSITE, PRODUCTS AND FORMAL DOCUMENTATION. THE BACK, AS IN THE THEATRE, IS FRAGMENTAL, INTUITIVE AND TENTATIVE, COMPRISING CONVERSATIONS, STRONGLY HELD OPINIONS, POINTS OF VIEW, THINGS ARGUED, IDEAS AND PRACTICES TAKEN AWAY AND DEVELOPED OR APPLIED ELSEWHERE. THE FORMAL BUSINESS OF THE PROJECT FOCUSED ON ITS FRONTSTAGE, THAT IS, THE MEANS THROUGH WHICH THE PROJECT MET ITS OBJECTIVES AND WAS HELD ACCOUNTABLE WITHIN THE COMENIUS PROGRAMME. THERE WAS ALSO CONSIDERABLE DISCUSSION ABOUT THE INTERRELATIONSHIPS BETWEEN THE DEVELOPMENT OF PRODUCTS AND THE MEANS BY WHICH THEIR ACTIVE USE MAY BE FACILITATED IN NEW SITES. THESE ARE VERY MUCH BACKSTAGE MATTERS. THEY INFLUENCE DISSEMINATION AND EVALUATION STRATEGIES, BUT ARE SELDOM CONNECTED WITH THEM EXPLICITLY. PROJECT AN INSIGHT INTO THE BACKSTAGE OF CODES REVEALED SOME OF THE WIDER PERSONALITIES OF THE PROJECT TEAM AND THE CREATIVE TENSIONS THAT EXISTED BETWEEN THEM. THESE MATTERS TYPICALLY DO NOT FIND THEIR WAY INTO EVALUATION REPORTS, BUT ARE NEVER THE LESS IMPORTANT INTELLECTUAL AND PROFESSIONAL OUTCOMES WITH TRANSFORMATIVE POTENTIAL. THE GOAL OF THE FINAL CONFERENCE, HOSTED BY THE AUTONOMOUS UNIVERSITY OF BARCELONA (UAB) IN BARCELONA WAS TO PROVIDE AN INTERACTIVE SPACE FOR PARTNERS AND DELEGATES TO LEARN FROM EACH OTHER AND TO FOSTER COLLABORATIVELY LOCAL SD FACILITATED BY

WITHSTANDING, DIFFERENCES ARE ALWAYS A GREAT CHALLENGE. THE PURPOSE IN ESD IS TO OVERCOME DIFFERENCES - IN LANGUAGE, CULTURE, VISIONS – RATHER TO MANAGE THEM. THE CONSTRUCTION OF TRUST AND RECIPROCAL UNDERSTANDING.

INTERNAL AND EXTERNAL TO THE PARTNER NETWORKS HAS BEEN THE TENSION BETWEEN ACTION AND ‘THOUGHT’. WHILE ACTIONS WITHOUT RESPONSIBLE THOUGHT HAVE DRIVEN OUR SOCIETY TO UNSUSTAINABILITY, THERE ARE STILL PRESSURES TOWARD ‘FAST’ AND ‘EFFECTIVE’ ACTION. THE PRACTICE OF CRITICAL THINKING HELPS THE ‘ACTIVIST’ ACCEPT ALSO THE MOMENT OF REFLECTION. WHEN DIFFERENT GROUPS INVOLVED IN ESD ARE ASKED TO COLLABORATE THERE IS THE CHALLENGE OF RECONCILING DIFFERENT PRIORITIES AND DIFFERENT QUALITY CRITERIA. OFTEN THEY ARE IMPLICIT, IN THE BACKSTAGE, AND IT IS ONLY DURING THE ACTIONS THAT PARTNERS DISCOVER HOW DIFFERENT ARE THEIR EXPECTATIONS AND THEIR JUDGMENTS WHEN CONFRONTED WITH PRACTICE.

RELATED TO THE POINTS ABOVE, A STRENGTH OF CODES UNDERLINED BY THE EVALUATION REPORTS WAS IN BRINGING TOGETHER ACADEMICS AND PRACTITIONERS IN PURSUIT OF COMMON GOALS AND AIMS. BUT THIS IS NOT WITHOUT TENSIONS. HIGHER EDUCATION WORLDWIDE IS PREDICATED ON A ‘GROWTH’ MODEL. ACADEMICS ARE UNDER GREAT PRESSURE TO PUBLISH. THIS MAY LEAD THEM TO TAKE ON MORE OF THE COLLECTIVE WORKLOAD, AND PUSH IT TOWARDS ACADEMICALLY RECOGNISED OUTCOMES. THIS PUTS ONUS ON VERY CAREFUL NEGOTIATION IN THE INITIAL PHASE OF A PROJECT WHEN INDIVIDUAL AND INSTITUTIONAL AGENDAS SHOULD BE PUT UP FRONT AND THEIR LONGER TERM IMPLICATIONS DISCUSSED.

ESD IS A TOPIC WHICH ATTRACTS PEOPLE WANTING TO WORK FOR A BETTER FUTURE. SUCH PEOPLE ARE USUALLY NOT STRONG IN SOLVING CONFLICTS BECAUSE OF THEIR ETHICAL VALUES. CONFLICT RESOLUTION IS IMPORTANT IN MAKING SD A REALITY. NEGOTIATION AND CONFLICT RESOLUTION ARE IMPORTANT MATTERS EMERGING FROM OUR EVALUATION.

POWER RELATIONS. SCHOOLS DO NOT HAVE THE FINANCIAL MEANS TO INSTIGATE PROJECTS. THEY SO TYPICALLY HAVE TO ‘FOLLOW’ THE ECONOMIC/FINANCIAL AGENDAS, AND ULTIMATELY SERVE THE INTERESTS OF THOSE PROVIDING THE FUNDING (VERY OFTEN COMMERCIAL ORGANISATIONS). RESEARCH HAS SHOWN THAT STUDENTS OF ALL AGES ARE NOT ONLY WILLING TO ENGAGE IN COLLABORATIVE PROJECTS, THEY ALSO HAVE INNOVATIVE AND OFTEN UNUSUAL IDEAS ABOUT THE CONTENT AND DIRECTION OF PROJECTS.

RELATED TO THE LAST POINT IS INTERGENERATIONAL CHANGE. TEN YEARS AGO, FEW PEOPLE WOULD HAVE PREDICTED THE IMPACT THAT SOCIAL MEDIA HAS HAD ON MODES OF COMMUNICATION. WE CANNOT ASSUME THAT THE FUTURE OFFERS A LINEAR TRANSITION FROM THE PRESENT. EVERY FIXED ASSUMPTION ABOUT SOCIETY ALTERS, AT LEAST IF ONE TAKES A LONG

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DEFINED BY SECTION 6 OF GOVERNMENT DECREE 110/2012 (VI. 4.), A COMPLEX EDUCATIONAL PROGRAM CONSISTS OF SEVEN ELEMENTS: A PEDAGOGICAL CONCEPT, A TEACHING-LEARNING PROGRAM, MODULAR TEACHING-LEARNING SEQUENCES, TOOLS (STUDENT INFORMATION SHEETS, WEBQUESTS, ETC.), ASSESSMENT AND EVALUATION TOOLS (GRIDS, CHECKLISTS, REFLECTIVE TOOLS), A PROFESSIONAL DEVELOPMENT PROGRAM AND A MENTORING SYSTEM. FROM THESE ELEMENTS THE EXPERT TEAM DEVELOPED THE PEDAGOGICAL FRAMEWORK (VIA A DIALOGUE WITH EXPERTS AND TEACHERS), INCLUDING SUCCESS CRITERIA (AS A RESULT OF A DELPHI RESEARCH), A REFINED VERSION OF THE PEDAGOGICAL CONCEPT, A PROPOSAL FOR THE FRAMEWORK OF ASSESSMENT AND EVALUATION TOOLS, A PROFESSIONAL DEVELOPMENT PROGRAM AND MENTORING GUIDE. THEN THESE TOOLS WERE REFINED THROUGH ITERATIVE CYCLES OF TRIALS, PILOTING AND REFLECTION. THEN THE PARTNER SCHOOLS PREPARED TEACHING-LEARNING SEQUENCES (MODULAR LEARNING CYCLES) REINFORCED BY ONLINE AND ON-THE-SPOT CONSULTATION USING REFLECTIVE TOOLS. THE PROCESS WAS SUPPORTED, GUIDED AND EVALUATED THROUGH PARTICIPATIVE ACTION RESEARCH USING CONVERGENT INTERVIEWS. FIGURE 1 HIGHLIGHTS THE MAIN ELEMENTS OF THE COMPLEX PEDAGOGICAL PROGRAM AS A SYSTEM (FALUS ET AL., 2012).

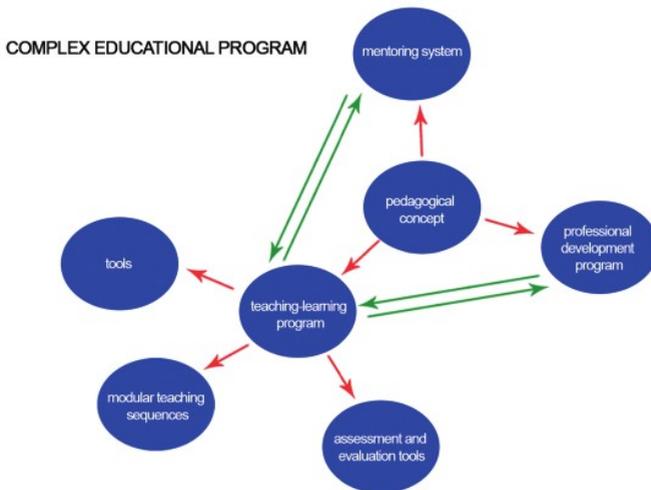


Figure 1. The elements of the complex educational program

THE SCIENCE EDUCATION TEAM COLLABORATED WITH 8 PARTNER SCHOOLS (INVOLVING 100 TEACHERS AND SOME 1100 STUDENTS) THROUGHOUT HUNGARY. THESE WERE ALL 'OPEN' SCHOOLS. THESE SCHOOLS, AS OPPOSED TO REGULAR SCHOOLS IN HUNGARY, ARE OPEN FROM AT LEAST 7AM TO 4PM, AND ORGANISE ACTIVITIES FOR PUPILS THROUGHOUT THE DAY. ALL THESE SCHOOLS ARE A SORT OF MIX OF AN EXTENDED SCHOOL AND OTHER TYPES OF OPEN SCHOOLS.

RICULAR EDUCATIONAL PROGRAM. SECONDLY, IT SERVED AS A META-RESEARCH TOOL AL REFLECTION ON RESULTS FROM 22 DIFFERENT PARTICIPATORY ACTION RESEARCHES BY 4 RESEARCHERS. AS BECAME APPARENT, SSM AS AN ACTION-ORIENTED WAY OF TACKLING DYNAMIC SITUATIONS (CHECKLAND, 1972) PROVED TO BE EXTREMELY USEFUL IN DEALING WITH DIFFERENCES BETWEEN SCHOOLS AND INDIVIDUAL TEACHERS (WHICH IS EVEN MORE EXPLORED AT A NATIONAL LEVEL) AND WITH PRIORITIES THAT CANNOT NECESSARILY BE TRACKED BY OTHER RESEARCH APPROACHES (DICK, 1999). THIS WAS ESPECIALLY RELEVANT IN THE CASE OF SUSTAINABILITY.

THE COMPLEX SCIENCE EDUCATIONAL PROGRAM WORKED WITH SIX PRIORITIES, OF WHICH SOME WERE MORE AND SOME LESS, EASY TO MEASURE. AS FOR THE SCIENCE LEARNING ELEMENTS, THE RESEARCH TEAM CONDUCTED A PUBLIC DELPHI RESEARCH RESULTING IN 10 SUCCESS CRITERIA WHICH SERVED AS A STARTING POINT FOR EVALUATION (DELBECQ ET AL., 1986). OTHER CRITERIA FOR MEASURING INQUIRY SKILLS, SCIENTIFIC THINKING AND STUDENTS ATTITUDES WERE ALSO ADOPTED. THE PRESENCE OF INCLUSION, ICT AND INTERNATIONAL PERSPECTIVES IN THE LEARNING ENVIRONMENTS COULD ALSO BE ESTIMATED, USING CLEAR CRITERIA AND CHECKLISTS FOR EVALUATION (DICK, 1999). IN THE CASE OF SUSTAINABILITY, THE RESEARCH TEAM FACED SEVERAL CHALLENGES IN EVALUATION, DESPITE THE DECISION TO ADOPT THE CRITERIA USED IN THE HUNGARIAN ECO SCHOOL NETWORK (WHICH IS BASED ON THE QUALITY CRITERIA PROPOSED FOR THE LEARNING ENVIRONMENT AND SCHOOL AND INITIATIVES (BREITING ET AL., 2005)). AS FOR SUSTAINABILITY AND SCIENCE LEARNING, DEFINING THE NEED IN A CURRICULUM IS ALREADY A CHALLENGE IN ITSELF, AND ADDING TO THAT, LOCAL AND INDIVIDUAL INDICATORS OF LEARNING AND ACHIEVEMENT CAN ALSO BE CHALLENGING TO A GREAT DEAL. AS OUR AIM WAS TO CREATE A PRACTICAL CURRICULUM FOR SCHOOLS, WHICH WAS ALSO FLEXIBLE ENOUGH NOT TO BE RESTRICTIVE, BUT THAT WOULD INSPIRE TEACHERS AND STUDENTS, SPACE HAD TO BE RESERVED FOR LOCAL COLLABORATIONS AND APPROACHES. AT THE SAME TIME, IT WAS IMPORTANT TO EXAMINE WHETHER THESE LOCAL APPROACHES STILL MATCH WITH THE SUSTAINABILITY FRAMEWORK AND CURRENT VALUES ASSOCIATED WITH SUSTAINABILITY.

THIS ACCOUNT IS MORE A DESCRIPTION OF THE LEARNING PATHWAY (AND THE ENGAGEMENT AND EVALUATION PROCESS) THAN OF THE ACTUAL RESULT, WHICH IS BEST MANIFESTED IN THE ACTUAL EDUCATIONAL PROGRAM CREATED IN THE PROJECT.

FRAMING THE RDI PROJECT USING SOFT SYSTEMS METHODOLOGY

ONE OF THE KEY PERSPECTIVES OF SSM IS TAKING PART IN ITS PRACTICE IN ORDER TO “UNDERSTAND AND ENJOY BENEFITS” (CHECKLAND, POULTER, 2006). SSM IS ABOUT DEALING WITH SO-CALLED PROBLEMATIC SITUATIONS. THESE ARE COMPLEX SETTINGS OF CIRCUMSTANCES AND ACTORS WHO HAVE DIFFERENT WORLDVIEWS AND TRY TO ACT PURPOSEFULLY IN A VIEW TO ENQUIRE ABOUT THE PROBLEMATIC SITUATION WITH THE INTENTION OF IDENTIFYING M

IN LESS FORTUNATE CASES WHEN ALL THESE FACTORS DO NOT MATCH PROPERLY, FURTHER CHALLENGES ARE REQUIRED FOR IMPLEMENTATION. EVEN PROVIDED THAT THESE ARE SUFFICIENT, CHALLENGES MAY EMERGE WHEN THE CULTURE OF A LEARNING COMMUNITY MAKES IT DIFFICULT FOR THE CURRICULUM TO WORK EFFICIENTLY (PATTON, 2011). THEREFORE, IN A PROCESS THAT REQUIRES MORE FLEXIBILITY FOR A CURRICULUM AND THAT INCLUDES PRACTICAL APPROACHES, ADAPTING IT TO SOCIAL AND LOCAL ASPECTS OF THE LEARNING ENVIRONMENT, THE IMPLEMENTATION OF AN EDUCATIONAL PROGRAM MIGHT MEAN FEWER CHALLENGES. ADDITIONALLY, IN THE CASE OF SUSTAINABILITY, THESE ASPECTS REPRESENT A SUBSTANTIAL ROLE IN SHAPING AN APPROPRIATE LEARNING ENVIRONMENT. ON TOP OF THESE, INTEGRATING SUSTAINABILITY AS A PRIORITY IN AN EDUCATIONAL PROGRAM INVOLVES FUTURE THINKING, WHICH BY ITS OWN NATURE QUESTION THE RELEVANCE OF PRE-DEFINED SOLUTIONS.

SSM AS A FRAMEWORK OFFERS SOLUTIONS TO DESCRIBE MODELS THROUGH EXPLORE AND ANALYZE STATE-OF-THE-ART AND CURRENT PRACTICES, USING DIVERGENT APPROACHES TO BECOME IN THE END RELATIVELY COHESIVE (CHECKLAND, 1991). IT ALSO MEANS THAT SSM DOES NOT OFFER ONE SOLUTION OR THE ONLY SOLUTION THAT SOLVES A CHALLENGE ONCE AND FOR ALL. RATHER, IT EXPLORES POSSIBLE SOLUTIONS, THE ADAPTATION OF WHICH CAN LEAD TO A CONTINUOUS PROGRESS TOWARDS DESIRED CHANGES.

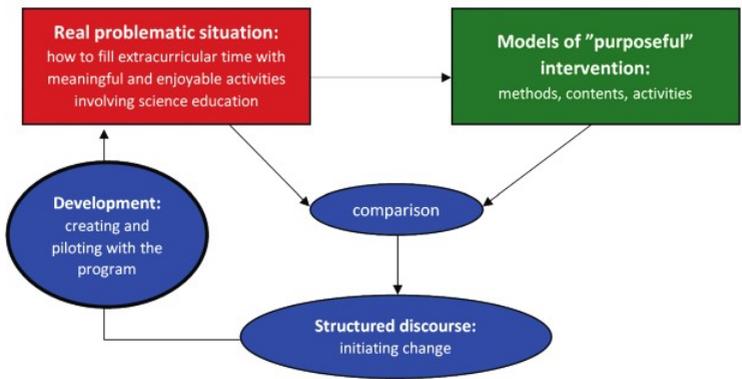


Figure 3. Soft systems methodology translated to creating an educational program

THE OVERALL LEARNING JOURNEY TAKEN BY THE PROJECT IS SHOWN IN FIGURE 3 WHERE THE NEED FOR COMPLEX EDUCATIONAL PROGRAMS IS REPRESENTED AS THE REAL PROBLEMATIC SITUATION. THE PURPOSEFUL ACTIVITY MODELS INCLUDE GOOD PRACTICES RECOGNISED IN THE EDUCATIONAL SYSTEM, TOGETHER WITH ELEMENTS SUCH AS DIDACTICS, TEACHING METHODS, USEFUL C

EFFICIENCY, EFFECTIVENESS). THESE SERVE AS ORGANISING PRINCIPALS FOR A MULTIPLE SOLUTIONS.

3. POSE QUESTIONS AND TEST THE MODEL AGAINST THE PROBLEMATIC SITUATION. ANSWERS AND EXPLORE DIRECTIONS OF DEVELOPMENT.
4. ESTABLISH FEASIBLE AND DESIRABLE ACTIVITIES AND INTERVENTIONS. AS ALL OF THEM INVOLVE CHANGES IN THE PROBLEMATIC SITUATION ITSELF, IT ALSO MEANS THAT AT ANY POINT IT IS POSSIBLE TO WITHDRAW FURTHER WORK USING SSM. THIS WILL NOT STOP THE SSM PROCESS AS AN ITERATIVE CYCLE CAN START AT THIS POINT.

IN THIS PROJECT, IN ADDITION TO APPLYING TRADITIONAL SSM TOOLS, OTHER RESEARCH METHODS WERE ALSO USED. IN A CLASSICAL APPROACH THESE CAN BE SEEN AS PRE-INTERVENTION, PROCESS-EMBEDDED AND POST-INTERVENTION RESEARCH ACTIVITIES. IN THE CASE OF THIS PROJECT THEY ALL CONTRIBUTED TO A MORE PROFOUND UNDERSTANDING AND REFLECTED ON THE SSM PROCESS.

BEFORE STARTING THE ACTUAL WORK IN PARTNER SCHOOLS AND IN ORDER TO BETTER UNDERSTAND THE PROBLEMATIC SITUATION, DATA AVAILABLE ONLINE WAS COLLECTED FROM 800 SCHOOLS IN HUNGARY, STRUCTURED INTERVIEWS WITH SCHOOL PRINCIPALS WERE HELD AND FOCUS GROUP INTERVIEWS WITH TEACHERS WERE CONDUCTED. AN ENVIRONMENTAL SCAN USING MANNINEN ET AL.'S MODEL OF LEARNING ENVIRONMENTS WAS ALSO UNDERTAKEN (MANNINEN, 2007). THE INFORMATION GATHERED PROVED TO BE USEFUL IN THE DIAGNOSTIC PHASE OF THE PARTICIPATORY ACTION RESEARCH. THIS DATA WAS ALSO USED TO ESTABLISH DIFFERENT DEGREES OF PARTICIPATION. TEN SUCCESS CRITERIA FOR SCIENCE LEARNING IN PRIMARY SCHOOLS IN HUNGARY WERE ALSO IDENTIFIED, USING A PUBLIC DELPHI RESEARCH. THESE CRITERIA WERE USED AS A REFERENCE POINT AS WELL AS A BASIS FOR REFLECTIVE TOOLS FOR TEACHERS.

PARTNER SCHOOLS WERE COMMITTED TO PARTICIPATE IN THE COLLABORATION AND WERE PROVIDED WITH SOME FINANCIAL SUPPORT AS WELL AS PROFESSIONAL GUIDANCE AS PART OF THEIR CONTRACT WITH THE HUNGARIAN INSTITUTE FOR EDUCATIONAL RESEARCH AND DEVELOPMENT. WITH THE PARTICIPATORY ACTION RESEARCH (PAR), THE DEAKIN MODEL WAS USED (DENZIN, LINCOLN, 2011), WITH THE AIM BEING TO CONDUCT AT LEAST TWO CYCLES OF RESEARCH CONSISTING OF THREE CYCLES IN EACH PARTNER SCHOOL. IN SOME SCHOOLS WHERE THE ORGANISATIONAL CULTURE AND FORMER EXPERIENCE ALLOWED, UP TO SIX CYCLES OF PAR WERE CONDUCTED, WITH UP TO FIVE TEACHERS PARTICIPATING IN EACH. ALL IN ALL 22 TEACHERS FROM 8 SCHOOLS PARTICIPATED IN THE PAR, CONDUCTED BY 4 RESEARCHERS. IN THE PLANNING PHASE OF PAR, EDUCATIONAL PROGRAMMING (DUIT, 2005) WAS USED AS A FRAMEWORK FOR DIALOGUE BETWEEN RESEARCHERS AND TEACHERS. IT WAS ALSO DECIDED TO USE CONVERGENT INTERVIEWS (DICK, 1990) IN ORDER TO GAIN DATA ABOUT THE CHANGING CULTURE AND POLITICS OF THE PROBLEMATIC SITUATION AND TO GAIN AN INSIGHT

THE PEDAGOGICAL CONCEPT: SCIENTIFIC LITERACY, INQUIRY BASED LEARNING, ICT, SUSTAINABILITY AND INTERNATIONAL PERSPECTIVES.

FIGURE 4 SHOWS THE PROCESS OF SSM FROM SUSTAINABILITY LEARNING ASPECT.

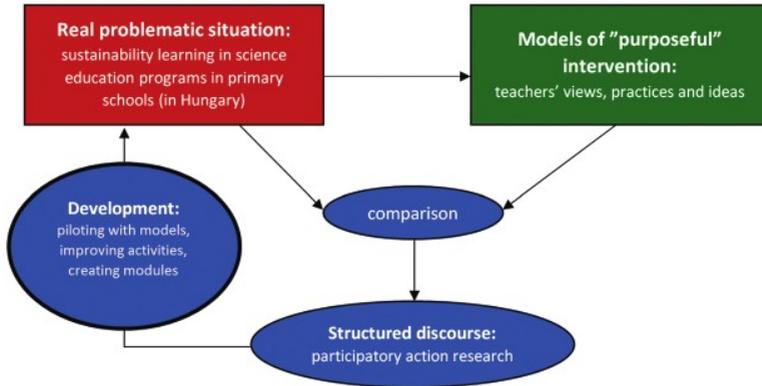


Figure 4. Soft systems methodology translated to sustainability in the science educational program

IN EACH SCHOOL THE PRACTICAL WORK STARTED WITH A GROUP DISCUSSION BETWEEN RESEARCHERS AND TEACHERS INVOLVED IN THE COLLABORATION, REFLECTING ON THE PROBLEMATIC SITUATION AND THE OVERALL APPROACH PRESENTED BY THE EDUCATIONAL PROGRAM. THEN THE TEACHERS DECIDED ON THE TOPICS THEY WANTED TO WORK WITH, AND USING A TEMPLATE CALLED 'TARGET DOCUMENT', DRAFTED THE PEDAGOGICAL AIMS, MAIN DEVELOPMENT TASKS, INDICATORS AND KEY STEPS OF THE INQUIRY CYCLE. THIS DOCUMENT WAS REVISITED BY THE GROUP OF RESEARCHERS AND TEACHERS AND AS A RESULT A LESSON PLAN EMERGED. THE TEACHERS PILOTTED THE LESSON WITH ONE CLASS, AFTER WHICH THEY REFLECTED ON THEIR EXPERIENCE WITH THE GUIDANCE OF TWO OTHER TEMPLATES. BASED ON THIS REFLECTION AS WELL AS FEEDBACK FROM COLLEAGUES PRESENT AT THE PILOT LESSON, THEY FINALISED THEIR LESSON PLAN. IN THIS WAY, 160 MODULES WERE PREPARED (EACH COVERING 3-5 LESSONS) DURING THE PERIOD OF COLLABORATION. OUT OF THESE 160 MODULES, 34 WERE DEVELOPED IN PAR. IN ADDITION, EACH TEACHER WAS ASKED TO PILOT 10 MODULES PREPARED BY A COLLEAGUE FROM ANOTHER SCHOOL AND USE THE SAME REFLECTIVE TEMPLATES.

THE RESEARCH TEAM THEN ASSESSED THE REFLECTIVE TEMPLATES, WHICH AGAIN LED TO RECONSIDERATION OF THE PROBLEMATIC SITUATION. DURING THIS PROCESS THE P

IN ADDITION TO CREATING INSPIRING LEARNING ENVIRONMENTS, WHICH EXTRACURRICULAR PROGRAMS ARE ESPECIALLY CAPABLE OF DOING, EVEN IN REGULAR FORMAL SCHOOLS (DUMONT ET AL, 2010), OTHER ISSUES EMERGED. ONE OF THE MOST IMPORTANT OF THESE WAS THE TEACHERS' DIVERSE UNDERSTANDING OF SUSTAINABILITY. AN INTERESTING ASPECT OF THIS WAS, THAT WHILE THEY ARE AWARE OF THE GLOBAL CONTEXT OF THE LOCAL PROBLEMS OBSERVED, OTHER ASPECTS (SUCH AS REGIONAL, NATIONAL OR EUROPEAN) WERE NOT PRESENT IN THEIR DECLARED TEACHING AIMS OR REFLECTIONS. ANOTHER ASPECT OF SUSTAINABILITY INVOLVED ADDRESSING COMPLEXITY. WHILE TEACHERS WERE WELL AWARE OF DIFFERENT ASPECTS OF SUSTAINABILITY (SUCH AS ECONOMIC, SOCIAL, ENVIRONMENTAL AND CULTURAL), THE PROPOSED ACTIVITIES USUALLY ONLY ONE, OR IN BEST CASES TWO WERE EXPLICITLY ADDRESSED, USUALLY WITH THE INTENTION OF "NOT TO CONFUSE STUDENTS". IT ALSO SEEMED THAT IN LOWER GRADES TEACHERS HAD TO PUT A CONSIDERABLE EFFORT INTO UNDERSTANDING TRANSDISCIPLINARY ISSUES DUE TO LACK OF SUFFICIENT SUBJECT KNOWLEDGE. THIS IS IN CONTRAST WITH TEACHERS OF GRADES 6-8 WHO OFTEN POSSESSED THE NECESSARY SUBJECT KNOWLEDGE BUT LACKED THE INTENTION TO THINK IN A TRANSDISCIPLINARY MANNER. THESE TEACHERS USUALLY CLAIMED THAT IT WAS "THE CURRICULUM WHICH PRESCRIBES THIS", DESPITE THE FACT THAT THE HUNGARIAN NATIONAL CORE CURRICULUM IS ORGANISED AROUND CULTURAL DOMAINS, NATIONAL SCHOOL SUBJECTS, AND THAT IN THIS PROJECT THE AIM WAS TO DEVELOP AN EXTRACURRICULAR PROGRAM. COMPLEXITY ALSO SEEMED TO BE A SENSITIVE ISSUE IN TERMS OF ASSESSMENT, ESPECIALLY BY SUBJECT TEACHERS WHO WERE UNCERTAIN WHETHER THEY WERE QUALIFIED TO BE RESPONSIBLE FOR ASSESSING ASPECTS OF LEARNING OTHER THAN THOSE RELATED TO SPECIFIC LEARNING OUTCOMES IN THEIR SUBJECT AREAS.

AN ONGOING DEBATE WAS GENERATED ABOUT WHETHER OR NOT CERTAIN TOPICS QUALIFY FOR BOTH SCIENCE AND SUSTAINABILITY WITH OFTEN THE CLAIMS BEING THAT CERTAIN TOPICS WERE NOT "SCIENTIFIC ENOUGH" (FOR EXAMPLE, IN THE CASE OF TRANSPORT) OR THAT THEY WOULD FALL INTO ANOTHER RELATED CLUSTER OF EDUCATION, SUCH AS ENVIRONMENTAL EDUCATION, SOCIAL LEARNING OR GLOBAL EDUCATION. IT SEEMED THAT THESE LABELS OFTEN DISEMPOWERED TEACHERS. THEREFORE, IT WAS DECIDED NOT TO USE THE ORIGINALLY INTENDED "EDUCATION FOR SUSTAINABILITY" LABEL, BUT TO PROPOSE LEADING QUESTIONS TO CONSIDER WHETHER OR NOT THE TEACHING-LEARNING MATERIAL HAD THIS ASPECT.

IT WAS ALSO INTERESTING TO OBSERVE HOW THE EMPHASIS DIFFERS BETWEEN THE DIFFERENT ASPECTS OF SUSTAINABILITY IN TEACHING-LEARNING CONTEXTS: REGULAR ECO-SCHOOL OR SCIENCE LEARNING; REGULAR CLASSES OR EXTRACURRICULAR ACTIVITIES; ONLY SCHOOL OR SCHOOL-COMMUNITY COLLABORATION; DIFFERENT AGE GROUPS; HOMOGENOUS OR HETEROGENOUS (MIXED) GROUPS OF STUDENTS AND CLASSROOM OR SITUATED LEARNING. IT SEEMED THAT TEACHERS HAVE STRONG HIDDEN CURRICULA FOR THESE DIFFERENT EDUCATIONAL SETTINGS.

EDUCATION FOR SUSTAINABLE DEVELOPMENT: DOES IT WORKING? A COMPARATIVE STUDY OF SCHOOLS IN POLAND AND ENGLAND

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AbSTRACT

THIS ARTICLE IS BASED ON RESEARCH INTO THE REACH AND QUALITY OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) IN ONE COUNTY IN ENGLAND, SHROPSHIRE, AND ONE DISTRICT IN POLAND, SIEDLCE. THE TWO PHASE COMPARATIVE RESEARCH WAS UNDERTAKEN IN 2012. QUESTIONNAIRES TO ALL SCHOOLS IN BOTH AREAS REVEALED THAT ONLY A MINORITY OF SCHOOLS CLAIM TO APPROACH EDUCATION FOR SUSTAINABILITY IN A SIGNIFICANT WAY. ONLY ABOUT 10% OF SCHOOLS HAD A WORKING ESD POLICY, ESD COORDINATORS AND SERIOUS APPROACHES TO INTEGRATING ESD INTO THE CURRICULUM. FOR MOST SCHOOLS, ESD WAS STILL PROJECT OR SCHOOL BASED. THIS RESEARCH WAS FOLLOWED BY DETAILED INTERVIEWS WITH PUPILS AND TEACHERS IN A SMALL SAMPLE OF SCHOOLS IN BOTH COUNTRIES WHICH REVEALED THAT IN SOME OF THE 10% OF SCHOOLS, ACTUAL UNDERSTANDING OF ESD WAS REALLY QUITE LIMITED. THERE WAS A STRESS ON BASIC ACTIONS SUCH AS RECYCLING AND SAVING ENERGY, BUT LIMITED CRITICAL UNDERSTANDING OF SUSTAINABILITY AS AN APPROACH AND WHY CERTAIN ACTIONS WERE IMPORTANT. POLISH SCHOOLS SHOWED LESS PROGRESS TOWARDS ESD THAN THE ENGLISH SCHOOLS, BUT BEARING IN MIND THE INVESTMENT INTO POLICIES AND CURRICULUM SUPPORT IN ENGLAND THE DIFFERENCE WAS PERHAPS NOT AS GREAT AS MIGHT HAVE BEEN EXPECTED.

KEYWORDS

ACTION, COMPETENCES, CRITICAL THINKING, INTEGRATION, QUALITY

INTRODUCTION

2014 WAS THE OFFICIAL END OF A MAJOR UNITED NATIONS INITIATIVE, THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (DESD). NO DOUBT THERE WILL BE DIFFERENT LEVELS OF EVALUATION OF THE DECADE AND NO DOUBT SUCCESSSES, FAILURE AND POINTS FOR LEARNING WILL BE DOCUMENTED IN DETAIL. THIS ARTICLE IS ONE CONTRIBUTION TO THIS PROCESS AND IT IS HOPED WILL PROVOKE DEBATE.

- THERE IS A TENDENCY FOR EVALUATION OF THE DESD FOCUS ON CASE STUDY “BEST PRACTICE” METHODOLOGY, USUALLY IN THE HOPES OF INSPIRING OTHERS, RATHER THAN “A PRACTICE” TO REALLY MEASURE THE CURRENT SITUATION.
- FINALLY THERE IS STILL CONFUSION OVER WHAT SUSTAINABLE DEVELOPMENT (SD) RE AND THE DIFFERENCES BETWEEN SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT. RESULT IS THAT ALMOST ANYTHING VAGUELY CONNECTED WITH OUR LIVES ON PLANET IS CONSIDERED EDUCATION FOR SUSTAINABILITY.

AS A RESULT MORE EVALUATION IS NEEDED THAT LOOKS AT:

1. THE AVERAGE PICTURE IN ALL SCHOOLS;
2. THE QUALITY OF WHAT HAPPENS IN OUR CLASSROOMS AROUND THE WORLD AND IMPACTS OF OUR EDUCATION FOR SUSTAINABILITY ON LONGER TERM THINKING AND A

THE PURPOSE OF THIS RESEARCH IS A CONTRIBUTION TOWARDS FILLING THOSE GAPS.

WHAT THIS RESEARCH AIMED TO DO WAS TO LOOK AT ALL THE SCHOOLS IN AN AREA, NOT “GOOD ONES” TO GET A FAIRER AND MORE RELIABLE PICTURE OF THE REAL SITUATION IN AND CLASSROOM. IN 2012 RESEARCH WAS UNDERTAKEN ON THE IMPLEMENTATION ALL THE SECONDARY PHASE SCHOOLS IN THE COUNTRY OF SHROPSHIRE IN ENGLAND, AN OR COUNTY OF SIEDLCE IN POLAND. THE SECONDARY STAGE OF FORMAL EDUCATION WAS BECAUSE IN BOTH IN POLAND AND THE UK SCHOOLING IS COMPULSORY UP TO THIS PHAS ACCORDING TO THE OECD THE KNOWLEDGE AND SKILLS OF PUPILS AT THE AGE OF COMPLETION OF THIS PHASE OF EDUCATION ARE A REFLECTION OF THE EFFECTS OF COM FORMAL EDUCATION THAT PREPARES STUDENTS TO TAKE ON SOCIAL ROLES IN ADULT LIFE

TWO RESEARCH APPROACHES WERE TAKEN. FIRSTLY, TO FIND OUT THE SITUATION A SCHOOLS A QUESTIONNAIRE WAS SENT TO ALL SECONDARY SCHOOLS IN BOTH SHROPSH SIEDLCE. THE QUESTIONNAIRE WAS SENT DIRECTLY TO THE TEACHERS MOST LIKELY TO B RESPOND, USUALLY THE GEOGRAPHY TEACHER. SECONDLY, THE RESEARCHERS VISITED A OF THE SCHOOLS IN POLAND AND THE ENGLAND TO TALK TO STUDENTS AND TEACHERS A THEIR UNDERSTANDING OF ESD AND THE IMPLEMENTATION OF ESD IN THEIR SCHOOLS. AS OF THIS VISIT STUDENTS IN THE SAMPLE SCHOOLS ALSO COMPLETED A QUESTIONNAIRE.

MAIN RESULTS OF THE QUESTIONNAIRE OF SCHOOL PERFORMANCE

THE FIRST STAGE WAS UNDERTAKEN THROUGH AN ONLINE QUESTIONNAIRE AND WAS ON THE SELF-EVALUATION QUESTIONNAIRES FOUND IN THE POLISH CERTIFICATION S ESD SCHOOLS “GREEN CERTIFICATION” AND THE UK’S “SUSTAINABLE SCHOOL SELF EVAL DOCUMENT. THE SURVEY WAS SENT TO ALL SECONDARY SCHOOLS IN SHROPSHIRE AND S

THE RESULTS IN TABLE 1 SHOW THAT POLICY SUPPORT FOR ESD IS STRONGER IN THE UK POLAND. A GREATER PROPORTION OF SHROPSHIRE SCHOOLS HAVE AN ESD POLICY, SUPPORTIVE HEAD TEACHER AND A NAMED COORDINATOR. THE BIGGEST DIFFERENCE IS EMPHASIS GIVEN TO ESD IN SCHOOL POLICIES AND PLAN WHERE ALTHOUGH THE PROPORTION OF SCHOOLS GIVING A HIGH PRIORITY TO ESD IS ABOUT THE SAME NEARLY 8% OF ENGLISH SCHOOLS GAVE IT A MEDIUM PRIORITY WHERE AS 45% OF POLISH SCHOOL GAVE IT A LOW PRIORITY. WITH REGARD TO THE ROLE OF THE HEAD TEACHER AND COORDINATION THERE IS NOT SO MUCH DIFFERENCE BETWEEN THE UK AND POLAND. THERE IS ONLY IN AROUND 10% OF SCHOOLS WHERE STRONG SUPPORT AND EFFECTIVE POLICIES CAN BE FOUND. DIFFERENCES ARE MORE SIGNIFICANT WHEN IT COMES TO PARTICIPATION IN THE ECO SCHOOLS PROGRAMME WHERE NONE OF THE POLISH SCHOOLS WERE PARTICIPATING WHEREAS HALF THE ENGLISH SCHOOLS ARE ECO SCHOOLS, AND PARTICIPATION IN TRAINING COURSES TO ESD WHERE TEACHERS IN THE UK HAD TAKEN PART. ALTHOUGH THESE DIFFERENCES MIGHT BE EXPECTED GIVEN THE ENERGY AND FUNDING COMMITTED BY THE UK DEPARTMENT OF EDUCATION TO NATIONAL SUSTAINABLE SCHOOLS POLICIES, IT IS PERHAPS SURPRISING THAT ONLY AROUND 18% OF SCHOOLS HAVING A FORMAL ESD COORDINATOR, ONLY 12% CONSIDERED THEMSELVES TO HAVE DEMONSTRATED WHAT MIGHT BE THOUGHT OF AS A COORDINATED AND INTEGRATED APPROACH.

| <i>Do you include sustainability topics such as energy saving, recycling, healthy eating, climate change, biodiversity, cultural diversity in your curriculum?</i> | <i>PL (%)</i> | <i>UK (%)</i> |
|---|----------------------|----------------------|
| <i>Hardly at all</i> | 5 | 0 |
| <i>Occasionally</i> | 25 | 24 |
| <i>Quite often</i> | 55 | 41 |
| <i>Very strongly</i> | 15 | 35 |

| <i>Do teachers of different subjects coordinate sustainability across subjects?</i> | <i>PL</i> | <i>UK</i> |
|--|------------------|------------------|
| <i>Yes</i> | 45 | 59 |
| <i>No</i> | 55 | 41 |

| <i>Are issues of sustainability considered in your school during additional activities like eco-clubs ?</i> | <i>PL</i> | <i>UK</i> |
|--|------------------|------------------|
| <i>Sustainability is covered in extra activities and the curriculum</i> | 95 | 82 |
| <i>Sustainability is only covered in extra activities</i> | 0 | 0 |
| <i>Sustainability is not really covered in extra activities</i> | 5 | 18 |
| <i>Very strongly</i> | 15 | 35 |

IN TERMS OF THE APPLICATION OF SUSTAINABLE POLICIES INTO THE MANAGEMENT SCHOOL IT SEEMS THAT UK SCHOOLS ARE SIGNIFICANTLY FURTHER AHEAD OF THEIR COUNTERPARTS. IN THE AREAS OF FOOD AND DRINK, ENERGY MANAGEMENT, WATER CONSERVATION AND WASTE MANAGEMENT, A LARGER PROPORTION OF UK SCHOOLS FALL INTO THE HIGHEST CATEGORY COMPARED WITH POLISH SCHOOLS. BEARING IN MIND THAT ANSWERS IN THIS CATEGORY IS AN INDICATION THAT STRATEGIC MANAGEMENT DECISIONS ARE BEING MADE, THIS IS A SIGNIFICANT DIFFERENCE. HAVING SAID THAT, IT IS ONLY ABOUT 20% OF SCHOOLS IN THE UK THAT FALL INTO THE HIGHEST CATEGORY AND EVEN IN THE UK ONLY AROUND 5% OF SCHOOLS HAVE ANY MEANINGFUL SUSTAINABLE PURCHASING POLICY. IN ADDITION IT SEEMS THAT POLISH SCHOOLS ARE FURTHER DOWN THE LINE OF STUDENT INVOLVEMENT IN DECISION MAKING ON SUSTAINABILITY ISSUES. THESE DIFFERENCES ARE INTERESTING AND COULD BE A REFLECTION OF THE FACT THAT IN THE UK THERE HAS BEEN A DRIVE TOWARDS SUSTAINABLE MANAGEMENT WITH SUPPORT BEING PROVIDED FOR HEAD TEACHERS AND SCHOOL MANAGERS. SCHOOLS IN THE UK ALSO HAVE SIGNIFICANT CONTROL OF THEIR OWN BUDGETS, MORE SO THAN IN POLAND, AND HENCE CAN MAKE DECISIONS RELATIVELY EASILY. IN SHROPSHIRE LOCAL AUTHORITY AS WELL AS IN OTHERS, THERE IS ALSO COORDINATION OF FUNCTIONS AT LOCAL GOVERNMENT LEVEL. IN THE PAST THREE YEARS THE SUSTAINABILITY TEAM HAS BEEN WORKING WITH THE EDUCATION TEAM TO SUPPORT SCHOOLS IN THE REDUCTION OF THEIR ENERGY CONSUMPTION.

RESULTS OF THE SECOND RESEARCH STAGE

THE PURPOSE OF THE SECOND RESEARCH STAGE WAS TO INVESTIGATE STUDENTS' ESSENTIAL SKILLS AND COMPETENCES, IN ORDER TO FIND OUT WHAT QUALITY OF ESD IS BEING DELIVERED. A SCHOOL'S EVALUATION OF ITS JOURNEY TOWARDS ESD IS ONE THING, BUT HOW WELL STUDENTS ARE EQUIPPED TO LIVE AND WORK FOR SUSTAINABLE LIFESTYLES IS ANOTHER. IN OTHER WORDS, "HAS CHANGED AS A RESULT OF THE LEARNING PROCESS AT THE INDIVIDUAL LEVEL?" (SEE APPENDIX OVER THE PAST DESD MUCH THINKING HAS BEEN DONE ON THE TOPIC OF ESD COMPETENCES. THIS WORK WAS LARGELY STARTED BY STEPHEN STERLING IN 1998 WHO PREPARED A REPORT FOR THE PANEL ON ESD IN THE UK WHICH LISTED A NUMBER OF GENERIC LEARNING OUTCOMES (STERLING, 1999). HE STATED THAT BY THE TIME A STUDENT HAD REACHED 16 HE SHOULD DISPLAY COMPETENCES RELATED TO THE FOLLOWING AREAS:

- 1 - Interdependence of society, economy and the environment (from local to global).*
- 2 - Citizenship - rights and responsibilities, participation and collaboration.*
- 3 - Needs and rights of future generations.*
- 4 - Diversity - cultural, social, economic and biological.*
- 5 - Quality of life, equity and justice.*
- 6 - Changes for sustainable development.*
- 7 - Uncertainty and the precautionary principle.*

AND ENGLAND, STUDENTS MOST FREQUENTLY MENTIONED GLOBAL WARMING (POLAND 84%, ENGLAND 84%). IN POLAND, OTHERS MENTIONED WERE ACID RAIN (54%), THE OZONE (28%), SMOG (26%) AND DEFORESTATION (18%).

- IN ENGLAND, OTHER FACTORS WERE MENTIONED BY SMALLER NUMBERS OF STUDENTS COMPARED WITH POLAND AND INCLUDED CHILD LABOUR (20%), LOW WAGES IN POOR COUNTRIES (6%), CHILD MORTALITY (2%), AND RESTRICTIONS ON ACCESS TO WATER AND FOOD IN DEVELOPING COUNTRIES (2%).
- WHEN ASKED “WHY IS IT IMPORTANT TO SAVE ENERGY?” MOST STUDENTS (POLAND 70%, ENGLAND 76%) SELECTED ONLY ONE REASON AND EXPLANATIONS WERE VERY SIMPLE AND DID NOT ENGAGE WITH THE COMPLEXITY OF THE ISSUE. TWO OF THE THREATS, “DEPLETION OF ENERGY RESOURCES” AND A “CONCERN FOR THE ENVIRONMENT” WERE MOST OFTEN MENTIONED (24% IN BOTH COUNTRIES). OF THE STUDENTS WHO GAVE TWO OR THREE ARGUMENTS, FOUR STUDENTS FROM POLAND AND NINE STUDENTS FROM ENGLAND MENTIONED THE NEED FOR ENERGY CONSERVATION FOR FUTURE GENERATIONS.
- WHEN ASKED WHAT WASTE SHOULD BE COLLECTED FOR RECYCLING THE LARGE MAJORITY OF POLAND STUDENTS MENTIONED GLASS, METAL, PLASTIC AND PAPER. AROUND ONE THIRD OF POLAND STUDENTS MENTIONED ELECTRONIC WASTE COMPARED WITH 6% OF ENGLISH STUDENTS WITH THE PROPORTIONS BEING THE OTHER WAY ROUND FOR ORGANIC WASTE.
- WHEN ASKED WHY RECYCLING WAS IMPORTANT THREE QUARTERS USED THE GENERAL REASON “PROTECTING THE ENVIRONMENT” AND ONLY AROUND A QUARTER (MORE IN POLAND THAN UK) WERE ABLE TO MAKE THE LINKS WITH MATERIALS RECOVERY AND SAVING RESOURCES.
- IN TERMS OF WHO WAS RESPONSIBLE FOR IMPLEMENTING SUSTAINABILITY ENGAGEMENT POLAND STUDENTS RATED POLITICIANS AND BUSINESS PEOPLE HAVING A HIGH RESPONSIBILITY FOR INDIVIDUALS. IN POLAND INDIVIDUAL RESPONSIBILITY RATED THE HIGHEST.
- WHEN ASKED WHAT THEY WERE DOING TO HELP THE ENVIRONMENT 16% OF POLAND STUDENTS AND 8% OF ENGLISH STUDENTS DIDN’T MENTION ANYTHING. OF THE STUDENTS WHO DID MOST STUDENTS LISTED THE SEGREGATION OF WASTE (POLAND 78%, ENGLAND 78%) AND ENERGY SAVING (POLAND 22%, ENGLAND 32%) . TRAVELLING BUS OR WALKING TO SCHOOL WAS ALSO MENTIONED, BUT BY VERY FEW (POLAND 8%, UK 16%) AS WAS GIVING MONEY TO CHARITY (POLAND 8%), DONATING CLOTHES TO THE RELEVANT CAUSES (POLAND 6%), BUYING FAIR TRADE PRODUCTS (ENGLAND 6%). INTERESTINGLY NONE OF THE STUDENTS FROM EITHER COUNTRY MENTIONED THE POSSIBILITY OF REDUCING CONSUMPTION OF THINGS LIKE CLOTHES, ELECTRICAL GOODS AND SO ON.
- IN POLAND 50%, AND IN ENGLAND 30% OF STUDENTS COULD NOT NAME ANY ENVIRONMENTAL OR DEVELOPMENT ORGANISATION. AMONG THE MOST WELL-KNOWN INTERNATIONAL ORGANISATIONS GREENPEACE WAS THE MOST COMMON (POLAND 36%, ENGLAND 38%) HOWEVER STUDENTS FROM ENGLAND WERE MOST FAMILIAR WITH FAIR TRADE ORGANISATIONS (FAIR TRADE) MENTIONED BY 54 %.

SCHOOLS AND VARIES TREMENDOUSLY ACCORDING TO THE TOPIC. SCHOOLS STILL RELY ON PROJECTS AND OUT OF SCHOOL ACTIVITIES TO DELIVER ESD. WHEN IT COMES TO THE DEMONSTRATING SUSTAINABILITY THROUGH PRACTICAL ACTION THERE IS A SIMILAR IMBALANCE WITH ONLY A SMALL PROPORTION HAVING POLICIES ON ENERGY USE AND OTHER ASPECTS OF SUSTAINABILITY. WASTE IS THE BIGGEST FOCUS. POLISH SCHOOLS TEND TO LAG BEHIND ENGLISH SCHOOLS IN MOST AREAS OF BOTH POLICY AND PRACTICE, THOUGH AN INTERESTING ANECDOTAL COMMENT MADE BY A TEACHER IN POLAND WHO HAS EXPERIENCE OF TEACHING IN BOTH ENGLAND AND POLAND IS THAT BECAUSE OF THE BIGGER RESOURCE FOCUSED APPLIED TO TEACHING IN ENGLAND (PHOTOCOPIED HANDOUTS, ELECTRONIC WHITEBOARDS, LARGER NUMBERS OF COMPUTERS AND SO ON) AND THE FACT THAT MOST CHILDREN TRAVEL TO SCHOOL BY CAR, THE ECOLOGICAL FOOTPRINT OF A POLISH SCHOOL IS LIKELY TO BE MUCH LOWER THAN A COMPARABLE ENGLISH SCHOOL.

THE OVERALL RESULTS FROM THE QUESTIONNAIRES AND THE DISCUSSIONS WITH STUDENTS ARE INTERESTING IN THAT THEY REVEAL THE QUALITY OF WHAT IS HAPPENING IN ESD IN SCHOOLS. THIS COMPARES SOMEWHAT UNFAVOURABLY WITH THE MORE POSITIVE CONCLUSIONS THAT MIGHT BE DRAWN ABOUT THE STATE OF ESD IF SIMPLY THE RESULTS OF QUESTIONNAIRES WERE TAKEN AS EVIDENCE. WHEN THIS LEVEL OF DETAIL IS EXAMINED, THE RELATIVELY LOW STATE OF ESD OF SCHOOLS BECOMES EVEN MORE WORRYING AS EVEN THOSE SCHOOLS IN THE TOP PERCENTILE AS IT WERE REVEAL A FAIRLY BASIC APPROACH TO ESD.

FIRSTLY, THE DETAILED SCHOOLS BASED WORK REVEALED A RELATIVELY LOW LEVEL OF KNOWLEDGE, UNDERSTANDING AND APPLICATION OF ENVIRONMENTAL AND DEVELOPMENT ISSUES. A SECOND CONCLUSION IS THAT STUDENTS MAINLY RELATED SUSTAINABILITY TO BASIC ACTIVITIES AS SUCH AS WASTE, SAVING WATER AND ENERGY BUT WITHOUT REALLY UNDERSTANDING THE LINKS BETWEEN THESE ACTIVITIES AND BROADER SUSTAINABILITY ISSUES. THIRDLY, STUDENTS DID NOT LINK THEIR CONSUMER HABITS WITH THE IMPACT ON THE STATE OF ENVIRONMENT AND THE QUALITY OF LIFE OF OTHER PEOPLE. FOR EXAMPLE, ALTHOUGH STUDENTS THOUGHT THAT RECYCLING WAS IMPORTANT, VERY FEW MADE THE LINK BETWEEN PERSONAL CONSUMPTION AND THEIR PRODUCTION OF WASTE WITH RECYCLING. FINALLY, MOST STUDENTS DID NOT THINK CRITICAL SUSTAINABILITY ISSUES AND ONLY SEEM TO BE ABLE TO MANAGE TO THINK ABOUT ONE ASPECT OF SUSTAINABILITY AT A TIME IN A VERY GENERAL WAY.

IT SEEMS THAT POLISH STUDENTS' UNDERSTANDING OF SUSTAINABILITY IS AT A LOWER LEVEL THAN THOSE FROM ENGLAND. THE POLISH STUDENTS GENERALLY TOOK A NARROWER AND MORE ECOLOGICAL VIEW OF SUSTAINABILITY, FOUND IT MORE DIFFICULT TO LINK LOCAL AND NATIONAL QUALITY OF LIFE ISSUES AND THEIR OWN PERSONAL CONSUMER HABITS WITH SUSTAINABILITY AND FOUND IT CHALLENGING TO EXPLAIN WHY THEY FOLLOWED CERTAIN ENVIRONMENTAL

MEANINGS THAT WRITERS/SPEAKERS SELECT AND ORGANIZE IN SUCH A WAY AS TO BUILD TEXT IN A SITUATED CONTEXT (GHIO AND FERNANDEZ, 2005). A REFLECTIVE ACTIVITY RE (RAR) IS LINGUISTIC PRODUCTION THAT CAN BE USED TO HELP CONSTRUCT THE MEANING OF ESSENTIALS THROUGH THE USE OF EVALUATIVE LANGUAGE. THIS MEANING IS CAPTURED BY THE TEXTUAL METAFUNCTIONS OF THE SEMANTIC SYSTEM OF LANGUAGE: IDEATIONAL, INTERPERSONAL AND TEXTUAL (HALLIDAY, 1985).

BACKGROUND OF THE SUPPORT NETWORK

SUPPORT (PARTNERSHIP AND PARTICIPATION FOR A SUSTAINABLE TOMORROW) WAS A COMENIUS III NETWORK RUNNING FROM 2007 TO 2010, WHICH IS USED AS THE CONTEXT FOR THIS RESEARCH. SUPPORT WAS ESTABLISHED IN ORDER TO ADDRESS THE NEED TO ENHANCE THE QUALITY OF EDUCATIONAL PRACTICES AND MATERIAL IN LINE WITH THE CHALLENGES OF THE DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (DESD). THE OVERALL OBJECTIVE WAS TO PROMOTE ESSENTIALS IN EUROPEAN SCHOOLS. THE PROJECT BROUGHT CONCEPTS AND PRACTICES OF SUSTAINABLE DEVELOPMENT (SD) INTO THE EDUCATION SYSTEM BY LINKING SCHOOL RESEARCH INSTITUTIONS AND COMMUNITIES IN A WEB-BASED NETWORK SUPPORTED THROUGH ICT (SANDAS, 2010).

SUPPORT INVOLVED THE COOPERATION OF ACTORS FROM 21 COUNTRIES AND 40 INSTITUTIONS AND DIFFERENT PROFESSIONAL BACKGROUNDS, SUCH AS RESEARCHERS, TEACHERS, POLICYMAKERS AND ENVIRONMENTAL EDUCATORS. INTERACTION AND COOPERATION AMONG KEY STAKEHOLDERS AND BEST PRACTICE EXCHANGE WERE FACILITATED BY THEMATIC CONFERENCES, WORKSHOPS, A COMENIUS MOBILITY SEMINAR, COMENIUS SCHOOL PARTNERSHIP CONTACT SEMINARS AND VARIATION STUDY VISITS. THE ACTIVITIES WERE MANAGED AND COORDINATED THROUGH AN ANNUAL STEERING GROUP AND PARTNER MEETINGS, AND MONITORED AND EVALUATED BASED ON INDICATORS. THE NORWEGIAN DIRECTORATE FOR EDUCATION AND TRAINING WAS RESPONSIBLE FOR THE FINANCIAL AND LEGAL MATTERS OF THE SUPPORT NETWORK, AND THE NORWEGIAN UNIVERSITY OF LIFE SCIENCES COORDINATED THE SUPPORT NETWORK AND WAS RESPONSIBLE FOR THE MANAGEMENT OF THE CONSORTIUM (SANDAS, 2010).

SUPPORT EVALUATION PLAN

THE PURPOSE OF THE SUPPORT EVALUATION PLAN WAS TO PROMOTE REFLECTION ON KNOWLEDGE AND MAKE DECISIONS SO THAT THE NETWORK REACHED ITS GOALS (MAYER AND ESPINET, 2008). IN ORDER TO DO THIS THE NETWORK ENVISAGED THREE EVALUATION STRATEGIES: MONITORING, INTERNAL EVALUATION AND EXTERNAL EVALUATION. THESE WERE COORDINATED BY DIFFERENT PEOPLE WHO MAINTAINED CONSTANT CONTACT WITH EACH OTHER. THE AIMS OF THE INTERNAL MONITORING, INTERNAL EVALUATION AND EXTERNAL EVALUATION CONDUCTED BY SUPPORT (BENEDICT, 2008) WERE TO:

SEMANTIC READINGS OF THE CONTENTS AND VALUE POSITIONS CONSTRUCTED BY WRITERS CHALLENGES AIMED AT BY THE APPRAISAL FUNCTIONS WITHIN THE APPRAISAL THEORETICAL APPROACH. THE WRITERS IN TEXTS ADOPT THREE EVALUATIVE STANCES (FIGURE 1): THE ATTITUDINAL POSITION AND THE DIALOGISTIC POSITION ARE CONSIDERED THE PRIMARY MODES OF EVALUATION. THE INTERTEXTUAL POSITION IS CONSIDERED A SUBTYPE OF THE DIALOGISTIC POSITION (KAPLAN, 2007).

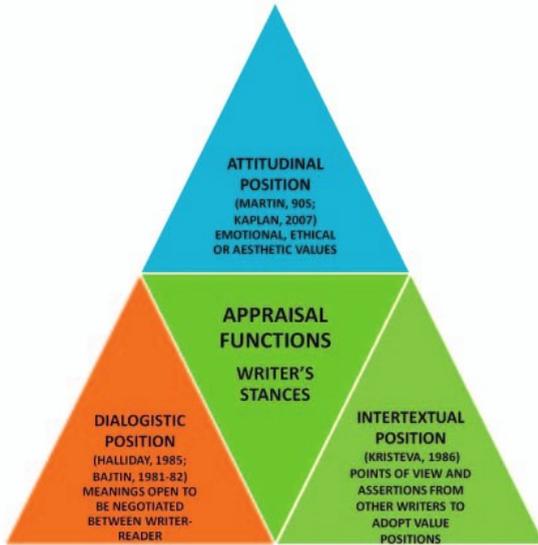


Figure 1. Appraisal Functions based on Appraisal Theory (based on: Kaplan, 2007)

- **The Attitudinal position** CAN BE AN EMOTIONAL, ETHICAL OR AESTHETIC POSITION AND, ULTIMATELY, AN IDEOLOGICAL ONE. IT REFERS TO THE MEANINGS BY WHICH WRITERS EXPRESS THEIR APPROVAL, THEIR BLAME OR RESPONSIBILITY ADDRESSED TO PEOPLE, PLACES, EVENTS AND SITUATIONS.
- **The Dialogistic position** IS RELATED TO THE WRITERS' MEANINGS THAT ARE NEGOTIABLE. THE STATEMENTS ARE CONSIDERED AS RESPONSES TO PREVIOUS STATEMENTS OR USED TO ANTICIPATE POSSIBLE OBJECTIONS OR QUESTIONS.
- **The Intertextual position** IS LINKED TO THE MEANINGS BY WHICH WRITERS TAKE EVALUATIVE STANCES FROM EXTERNAL PROPOSITIONS (VIEWS AND ASSERTIONS FROM OTHER WRITERS). NORMALLY THIS POSITION IS REFLECTED IN THE CITATIONS OR REFERENCES TO THE WORKS OR THOUGHTS OF OTHERS.

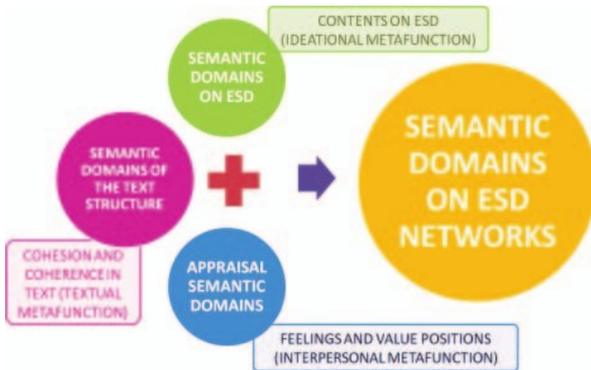


Figure 2. Semantic Domains on ESD Networks

- Semantic domains on ESD.** THESE REFER TO THE COMMON VALUES OF ESD AND THE VISIONS OF QUALITY OF ESD NETWORK PRODUCTS, SHARED BY SUPPORT PARTNERS. THESE DOMAINS ARE RELATED TO THE IDEATIONAL METAFUNCTION OF LANGUAGE INCLUDING INTERACTIONS AND EXCHANGES, LEARNING, NEW VISIONS ON ESD, FACILITIES AND SUPPORT REQUIREMENTS, ORGANIZATION AND TIME MANAGEMENT.
- Appraisal semantic domains.** THESE REFER TO THE MEANING OF THE EVALUATIVE STANCES ADOPTED BY WRITERS IN THEIR TEXT. THESE MEANINGS WERE PUT INTO ONE OF THREE EVALUATIVE POSITIONS: ATTITUDINAL, DIALOGICAL AND INTERTEXTUAL (KAPLAN, 1986). IN THEIR TEXT, WRITERS EXPRESS THEIR EMOTIONS, JUDGEMENTS AND TASTES, AND TAKE A STANCE TOWARDS THESE VALUE POSITIONS AND WITH RESPECT TO THOSE THEY ARE REFERRING UP-SCALE AND DOWN-SCALE WHAT THEY WANT TO SAY. THESE DOMAINS ARE RELATED TO THE INTERPERSONAL METAFUNCTION OF LANGUAGE, AND INCLUDE: ATTITUDE, ENGAGEMENT AND GRADATION.
- Semantic domains of the structure of written texts.** THESE REFER TO THE MEANING REGARDING THE COHESION AND COHERENCE IN THE TEXT RELATED TO THE TEXTUAL METAFUNCTION. THESE DOMAINS UPDATE IDEATIONAL AND INTERPERSONAL MEANINGS AS A COHERENT LANGUAGE IN COHESIVE TEXT AND INCLUDE: BACKGROUND, SUMMARY, INTRODUCTION, DEVELOPMENT, ASSESSMENT OF ACTIVITY AND CONCLUSION.

AN EXAMPLE OF USING THIS ANALYTICAL APPROACH IN THE RARs SENTENCES CAN BE APPLIED BELOW, IN THE FIRST PARTNER MEETING (PM1) OF SUPPORT NETWORK WRITTEN BY THE COORDINATOR OF THE NETWORK (NC):

PM1 RAR, BY NC:

“A wonderful dancing and music social evening arranged by the hosts on Wed-

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DEVELOPMENT MUST MOVE TOWARDS CREATIVITY (INNERARITY, 2010). IN ORDER TO FACE THE CHALLENGES OF THE 21ST CENTURY SOCIETY PROFESSIONALS IN DIFFERENT SECTORS OF THE ECONOMY ARE BEING ASKED TO ADD SUSTAINABILITY CRITERIA TO THEIR PROFESSIONAL ACTIVITIES AND DEVELOP A COMPETITIVE PERSPECTIVE. AS A RESULT EDUCATORS WHETHER IN FORMAL OR NON-FORMAL INSTITUTIONS OF EDUCATION, SHOULD PLAY A FUNDAMENTAL ROLE AS FORMATIVE AGENTS OF CITIZENSHIP.

THE WAY EDUCATION HAPPENS WITHIN SOCIETIES AND COMMUNITIES IS HUGELY VARIABLE DUE TO THE FACT THAT IT IS NOT JUST THE RESPONSIBILITY OF JUST A FEW AGENTS AND INSTITUTIONS. THE TERMS “FORMAL” AND “NON-FORMAL” ARE OFTEN USED TO DISTINGUISH DIFFERENT APPROACHES BUT ARE NOT REALLY APPROPRIATE TO DESCRIBE ALL THE CHARACTERISTICS OF EDUCATION, SUCH AS EXACTLY WHAT HAPPENS DURING LEARNING AND HOW IT HAPPENS (HEIN, 1998 IN GUIASOLA AND MORENTIN, 2007). IT IS MORE APPROPRIATE TO TALK ABOUT A CONTINUUM, FROM PERHAPS HIGHLY STRUCTURED SCHOLARLY ACTIVITIES AT ONE END, TO OPEN ACCESS AND INDIVIDUAL LEARNING AT THE OTHER. OTHER ACTIVITIES, E.G. RELATED TO LEISURE BASED LEARNING OR OUT OF CLASSROOM LEARNING COULD BE FOUND SOMEWHERE IN THE MIDDLE. THIS CHAPTER IS CONCERNED WITH THE LATTER APPROACH TO LEARNING THROUGH THE EXAMPLE OF THE CATALONIA “ESPLAI ESPURNES” GROUP.

IT IS IMPORTANT TO LOOK FOR NEW METHODOLOGIES THAT SUPPORT THE DEVELOPMENT OF NEW APPROACHES TO TEACHING. THE CHALLENGE IS TO DEFINE NEW FORMATIVE MODELS THAT FAVOUR THE DEVELOPMENT OF SKILLS IN EDUCATION PROFESSIONALS THAT ENABLE THEM TO PROVIDE ANSWERS IN DIFFERENT CONTEXTS.

THIS PROJECT HAS THE TITLE, “A FORMATIVE MODEL FOR THE DEVELOPMENT OF PROFESSIONAL COMPETENCES OF TEACHERS IN EDUCATION FOR SUSTAINABILITY: CHARACTERISTICS, APPLICATION AND EVALUATION”. IT HAS BEEN DEVELOPED BY THE COMPLEX RESEARCH GROUP (CRG) OF THE DEPARTMENT OF DIDACTICS, MATHEMATICS AND EXPERIMENTAL SCIENCE OF THE AUTONOMOUS UNIVERSITY OF BARCELONA. ITS PURPOSE IS TO DEFINE A FRAMEWORK OF EDUCATION FOR SUSTAINABILITY PROFESSIONAL COMPETENCES FOR EDUCATORS IN FORMAL AS WELL AS NON-FORMAL EDUCATION INSTITUTIONS. IT AIMS TO DEVELOP A FORMATIVE MODEL TO ADDRESS CURRICULUM GREENING (BONIL ET AL., 2012) THROUGH SUPPORTING THE DESIGN OF ACTIVITIES TO DEVELOP NECESSARY AND APPROPRIATE COMPETENCES.

FOCUS, AIM AND OBJECTIVES OF THE RESEARCH

THE RESEARCH TOOK PLACE IN A SPECIFIC NON-FORMAL EDUCATION INSTITUTION: THE “ESPLAI ESPURNES” GROUP. THIS IS A NON-PROFIT YOUTH ASSOCIATION FROM ESPLUGUES DE LLIBRE (BARCELONA) THAT HAS WORKED AS A LEISURE TIME EDUCATIONAL INSTITUTION FOR CHILDREN

A complexity paradigm A RIGOROUS, OPEN AND DYNAMIC PLATFORM THAT CAN HELP INDIVIDUALS AND INSTITUTIONS FACE THE GLOBAL CRISES IN A CREATIVE AND TRANSFORMATIVE WAY (BONIL ET AL., 2010). IT PROPOSES A CHANGE IN THE WAY THE WORLD IS UNDERSTOOD AS A RESULT, OF THE PROCESSES NEEDED TO UNDERSTAND IT (GARCIA, 2004). THE COMPLEXITY PARADIGM IS AN ALTERNATIVE TO THE SO-CALLED SIMPLIFIER PARADIGM (MUERAN, 1982).

THE FORMATIVE MODEL PROPOSED BY THE CRG

formative models ARE THEORETICAL ELABORATIONS THAT EDUCATION PROFESSIONALS PUT INTO PRACTICE IN A SPECIFIC CONTEXT. THEY ARE INTERPRETATIONS AND ADAPTATIONS OF THEORIES THAT ARE MEDIATED THROUGH THE WORLDVIEW OF INDIVIDUALS AND THEIR BELIEFS ABOUT EDUCATION AND ON THE ROLE THE ENVIRONMENTAL EDUCATION SHOULD HAVE IN EDUCATIONAL INSTITUTIONS (BONIL ET AL., 2012).

THE FORMATIVE MODEL PROPOSED BY THE CRG AIMS AT SHORTENING THE DISTANCE BETWEEN THE IDEOLOGICAL APPROACH OF ENVIRONMENTAL EDUCATION AND ITS PRACTICAL APPLICATION IN THE CLASSROOM. IT ACHIEVES THIS PARTLY THROUGH ENSURING THAT THE ACTIVITIES ARE RELEVANT TO THE SPECIFIC SITUATION (THE ‘MOMENT’), TO THE INDIVIDUALS THEMSELVES AND THAT IT HAS A RELEVANCE TO AND IMPACT ON THE COMMUNITY.

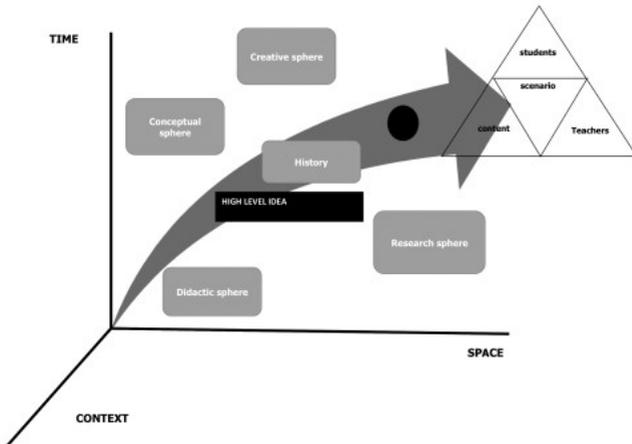


Figure 1: CRG formative model

THE PROPOSED MODEL IS BASED ON AN INTERSECTION OF SPACE, TIME AND SOCIO-CULTURAL CONTEXT WHERE THE FORMATIVE ACTIVITY IS DEVELOPED (FIGURE 1). THIS POINT CONSTITUTES A SYSTEM WHERE THE EPISTEMIC VALUES OF COMPLEXITY ENABLE THE APPEARANCE OF IDEAS RELEVANT TO THE CONSTRUCTION OF AN INDIVIDUAL’S WORLDVIEW. THESE SO CALLED HIGH LEVEL IDEAS ARE THE FOUNDATION OF FORMATIVE ACTION. IDEAS SUCH AS THE ‘UNIMAGINABLE’

METHODOLOGICAL APPROACH

THE PROCESS OF ACTION-RESEARCH WAS DEVELOPED FROM THE MODEL PROPOSED BY KEMMIS AND MCTAGGART (1988) WHERE IT IS DESCRIBED AS A SEQUENCE OF STEPS REPRESENTING A CYCLE OR SPIRAL. IN THIS RESEARCH, THE FIRST CYCLE WAS THE ESTABLISHMENT OF THE BASE (FIGURE 1) WHICH IS SEEN AS THE STARTING POINT TO BUILD THE CRG FORMATIVE. IT IS IMPORTANT TO POINT OUT THAT THE PROCESS IS NOT ACTUALLY AS PRECISE AS SUGGESTED IN FIGURE 2, AS A RESULT OF THE DIFFERENT OVERLAPPING STEPS OF EACH CYCLE. THE DATA COLLECTION METHODS INCLUDES AUDIO RECORDINGS, FIELD DIARIES AND INTERVIEWS WITH THE STAKEHOLDERS. ACTION RESEARCH IS CHARACTERISED AS BEING BOTH PARTICIPATIVE AND COLLABORATIVE. IT FOCUSES ON THE EDUCATIONAL PRACTICE AND ON THE EMANCIPATORY LEARNING OF A TEAM OF TEACHERS. IT MAKES A SPECIAL EFFORT TO CHANGE WAYS OF WORKING (CONSTRUCTIVELY, SPEECH, ORGANISATION AND POWER RELATIONS) AND IT IS UNDERSTOOD AS A FORMATIVE PROCESS. IT AIMS AT THE TRANSFORMATION OF ORGANISATION.

THIS INVESTIGATION AIMS TO MAXIMISE THE COLLECTIVE DIMENSION AS OPPOSED TO AN INDIVIDUAL ONE AND WAS PLANNED AND EXECUTED BY THE STAKEHOLDERS THEMSELVES. FOR THIS REASON, TEACHERS OF THE "ESPLAI ESPURNES" GROUP AND RESEARCHERS OF THE CRG TOOK UP THE STAKEHOLDERS IN THIS DOUBLE PROCESS. ON THE PART OF THE "ESPLAI ESPURNES" GROUP THE PROCESS WAS STARTED WITH THE PARTICIPATION OF THE GROUP MANAGER AND A PERSON RESPONSIBLE OF GROUP PROJECTS. FROM THE CRG'S SIDE, THE RESEARCHER ACTED AS A FACILITATOR. THE COLLABORATION BETWEEN THE FACILITATOR AND THE PARTICIPANTS AIMS AT THE NEGOTIATION AND INVESTIGATION OF QUESTIONS AND ISSUES OF MUTUAL INTEREST.

THE WORK OF THE STAKEHOLDERS IN THE RESEARCH TOOK ACCOUNT OF THE POWER RELATIONS AND THE MUTUAL EXPLOITATION OF THE SPECIALIZED KNOWLEDGE DIFFERENT GROUPS IN THE CENTRE AND GRC HOLD. THE FLOW OF INFORMATION BETWEEN THEM IS OF PRIME IMPORTANCE AND A BASIC TOOL. IT IS THEREFORE MEANT TO START THE DEVELOPMENT OF A COMMUNICATIVE METHODOLOGY AND SHARED ACTION WHILE TRYING TO ESTABLISH THE RESEARCH GROUP AS AN AGENT AND AS A RESEARCH FRAMEWORK.

SPIRAL I DESCRIPTION: ESTABLISHMENT OF THE BASES OF THE RESEARCH

THE RESEARCH PROCESS IS STILL BEING DEVELOPED AND AS A RESULT ONLY THE FIRST SPIRAL HAS BEEN COMPLETED. THE ACTIVITIES IN THIS CYCLE AND THE RESULTS ARE DESCRIBED IN FIGURE 2 TOGETHER WITH IDEAS FOR THE CONTINUATION OF THE NEXT SPIRAL OF RESEARCH. IN THE FIRST CYCLE, ACTIONS RELATED TO THE CHANGE PROCESS AND THE INVESTIGATION OF THE BASES WERE PROGRESSED IN PARALLEL SINCE THE TWO PROCESSES ARE INTERCONNECTED. THE ACTIONS RELATED TO THE STEPS PROPOSED BY KEMMIS AND MCTAGGART (1988) WERE TAKEN.

Acting:

THE PLAN OF ACTION AGREED INVOLVED A REVIEW OF THE INSTITUTION'S ORGANISATIONAL DOCUMENTS INCLUDING THE IDEOLOGY OF THE CENTRE, THE OBJECTIVES OF THE CURRENT PROGRAMME (2013-2014) AND THE ORGANISATION OF THE DIFFERENT FIELDS OF ACTION IN WHICH THE INSTITUTION PARTICIPATES. FOLLOWING THESE REVIEWS, TWO MEETINGS TOOK PLACE THAT EXAMINED THE GAP BETWEEN WHAT THE POLICIES AND PROGRAMMES STATED AND THE REALITY OF EDUCATIONAL ACTIVITIES TAKING PLACE.

Observing:

THROUGH AN ANALYSIS OF THE DISCUSSIONS POSSIBLE REASONS FOR THE INSTITUTION'S CURRENT SITUATION WERE IDENTIFIED THAT ASSISTED IN CONTEXTUALISING THE CHANGE PROCESS. THE OBSERVATION STAGE POINTED OUT THAT:

- THE INSTITUTION UNDERTAKES ACTIVITIES IN MANY FIELDS.
- THE TRAINING OF TEACHERS AT THE CENTRE IS BASED ON AN OUT OF DATE FORMATIVE MODEL.
- TAKING INTO ACCOUNT THE DIFFICULTY OF COORDINATING SCHEDULES, THE AVAILABILITY AND RESPONSIBILITY OF THE TEACHERS, IT IS NOT ALWAYS POSSIBLE TO ENSURE A HIGH QUALITY OF LEARNING.
- THE HIGH TURNOVER OF TEACHERS THROUGH THE CENTRE CREATES INSTABILITY AND WEAK SOLIDARITY IN THE TEAM OF TEACHERS. AN EFFECT OF THIS IS THAT THERE IS THE NEED FOR A SIGNIFICANT ONGOING INVESTMENT OF TIME AND RESOURCES IN TRAINING NEW TEACHERS. THE INCREASE OF ACTIVITY OVER THE LAST FEW YEARS HAS GENERATED GROWTH WHICH IS PROBABLY DIFFICULT TO SUSTAIN. EVERY YEAR NEW PROJECTS ARE INITIATED WHILE PREVIOUS ONES ARE MAINTAINED.

Reflecting:

ONCE THE POSSIBLE CAUSES OF THE PROBLEMS WERE IDENTIFIED, A DIAGNOSIS WAS MADE AND BASED ON THIS A REVIEW MADE OF THE DIFFERENT AREAS OF THE CENTRE'S WORK. THE MAIN AIM WAS TO DETECT WHERE IT MIGHT BE POSSIBLE TO INTRODUCE THE FORMATIVE MODELS TO INITIATE THE CHANGE PROCESS. ONE OF THE KEY TASKS IN THIS PROCESS WAS TO IDENTIFY THE MOST APPROPRIATE TEACHERS TO TAKE PART IN THE PROJECT. ONCE THIS WAS DONE AN OPEN RESEARCH GROUP WAS CREATED WITH A PERMANENT CORE OF MEMBERS TOGETHER WITH THE OPPORTUNITY TO INCLUDE OTHER TEACHERS AND DIFFERENT STAKEHOLDERS SUCH AS EXPERTS AND TRAINERS THAT COULD CONTRIBUTE TO THE PROJECT ON AN AD HOC BASIS. IT WAS CONSIDERED THAT SUCH AN OPEN GROUP WOULD CONTRIBUTE TOWARDS THE SUSTAINABILITY OF THE PROJECT OUTCOMES THROUGH PROVIDING CONTINUITY DURING THE CHANGE PROCESS. THE WORK OF THE OPEN GROUP IS RELATED TO HIGH LEVEL IDEA (BO

DISCUSSION AND RECOMMENDATIONS

THE EXPERIENCE OF THE FIRST CYCLE OF THE INVESTIGATION-ACTION ALLOWS DECISIONS MADE ABOUT THE CONTINUITY OF THE PROJECT. BEARING IN MIND THE OUTCOMES REVIEW, THE CONTINUITY OF THE PROJECT CAN ALSO BE CONSIDERED FROM A MORE PERSPECTIVE THAT REFLECTS ON THE PERFORMANCE OF A PROJECT AND IN WHICH TEACHERS AND STAKEHOLDERS IN THE CENTRE FEEL REPRESENTED.

IN THE FUTURE, THE INTENTION IS TO ESTABLISH FIVE PHASES OF ACTIVITY EACH FOLLOWING A SPIRAL OF INVESTIGATION AND ACTION:

- **Phase 1 – Theoretical reflections** WILL INVOLVE DISCUSSIONS BASED ON A SELECTION OF READINGS RELATED TO CURRICULUM GREENING AND THE FORMATION OF EDUCATIONAL TEAMS IN THE CONTEXT OF A NON-FORMAL EDUCATION.
- **Phase 2 – formative actions** FOLLOWING THE THEORETICAL REFLECTION SEVERAL FORMATIVE ACTIONS WILL TAKE PLACE. THESE WILL INCLUDE SEMINARS DEVELOPED BY THE EXPERTS AND WORKSHOPS IN INSTITUTIONS WHERE CRG'S FORMATIVE MODEL HAS ALREADY BEEN INCORPORATED. THESE WILL BE CONDUCTED BY BOTH THE RESEARCH TEAM AND CENTRE TEACHERS.
- **Phase 3 – Designing an educational project** BASED ON THE CRG'S FORMATIVE MODEL AND THE REFLECTIONS MADE IN PHASE 1, AN EDUCATIONAL PROJECT THAT FITS WITH CENTRES ACTIVITIES AND BASED ON A HIGH-LEVEL IDEA IS PLANNED.
- **Phase 4 – Project Implementation** THE PROJECT IS IMPLEMENTED OVER A PERIOD OF SEVEN MONTHS. EACH PART OF THE PROJECT ACTIVITY INCLUDES THE PERFORMANCE OF AN ACTIVITY, A PERIOD OF TIME AFTER THE ACTIVITY TO COLLECT IMPRESSIONS BASED ON FIELD NOTES AND TEACHER INTERVIEWS.
- **Phase 5 – Project Assessment** FREE FEEDBACK, REVIEW AND ASSESSMENT SESSIONS ARE PLANNED WITH THE TEACHERS WHERE THE PROJECT ACTIVITY AND FOLLOW-UP ARE CONSIDERED. A FINAL ASSESSMENT WILL ALSO TAKE PLACE.

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RESEARCH AND INNOVATION IN EDUCATION FOR SUSTAINABLE DEVELOPMENT

THIS BOOK IS THE OUTCOME OF THE WORK OF ENVIRONMENT AND SCHOOL INITIATIVES (ENSI), AN INTERNATIONAL NETWORK OF EDUCATIONAL PARTNERS AND THE EUROPEAN PROJECT CoDeS, COLLABORATION OF SCHOOLS AND COMMUNITIES FOR SUSTAINABLE DEVELOPMENT (2011-2014). THE OBJECTIVE OF THE BOOK IS TO PROVIDE COLLECTIVE EXPERIENCES IN RESEARCH AND INNOVATION IN EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD). IT IS DIVIDED INTO FOUR PARTS. PART I. IS DEVOTED TO NETWORK COLLABORATION APPROACHES FOR ESD. PART II. EXPLORES WHICH CRITICAL CHALLENGES CAN BE IDENTIFIED IN ESD APPROACHES. PART III. IS ORIENTED TOWARDS THE COOPERATION BETWEEN EDUCATION AND RESEARCH FOR SUSTAINABLE DEVELOPMENT. PART IV. PROVIDES INSIGHTS INTO DIFFERENT EVALUATION AND ASSESSMENT APPROACHES TO ESD.