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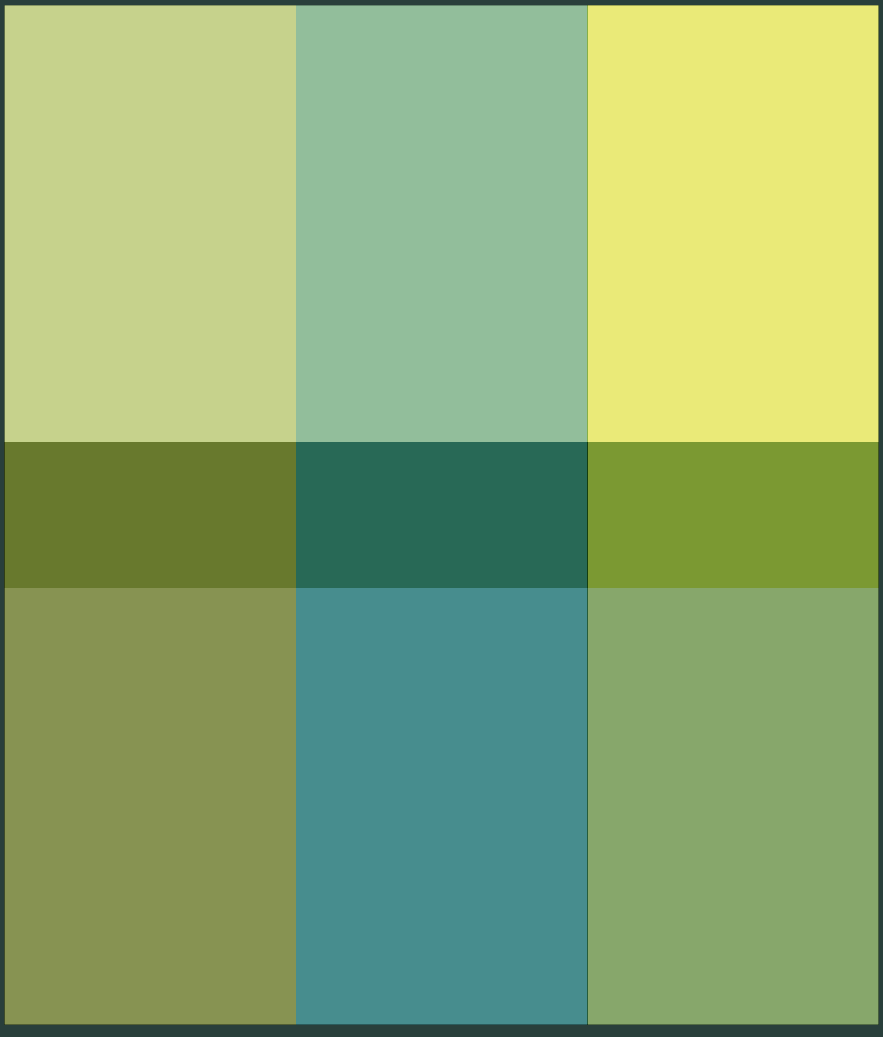

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C·E·P·S *Journal*

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The CEPS Journal is an open-access, peer-reviewed journal devoted to publishing research papers in different fields of education, including scientific.

Aims & Scope

The CEPS Journal is an international peer-reviewed journal with an international board. It publishes original empirical and theoretical studies from a wide variety of academic disciplines related to the field of Teacher Education and Educational Sciences; in particular, it will support comparative studies in the field. Regional context is stressed but the journal remains open to researchers and contributors across all European countries and worldwide. There are four issues per year, two in English and two in Slovenian (with English abstracts). Issues are focused on specific areas but there is also space for non-focused articles and book reviews.

About the Publisher

The University of Ljubljana is one of the largest universities in the region (see www.uni-lj.si) and its Faculty of Education (see www.pef.uni-lj.si), established in 1947, has the leading role in teacher education and education sciences in Slovenia. It is well positioned in regional and European cooperation programmes in teaching and research. A publishing unit oversees the dissemination of research results and informs the interested public about new trends in the broad area of teacher education and education sciences; to date, numerous monographs and publications have been published, not just in Slovenian but also in English.

In 2001, the Centre for Educational Policy Studies (CEPS; see http://ceps.pef.uni-lj.si) was established within the Faculty of Education to build upon experience acquired in the broad reform of the national educational system during the period of social transition in the 1990s, to upgrade expertise and to strengthen international cooperation. CEPS has established a number of fruitful contacts, both in the region – particularly with similar institutions in the countries of the Western Balkans – and with interested partners in EU member states and worldwide.

Revija Centra za študij edukacijskih strategij je mednarodno recenzirana revija, z mednarodnim uredniškim odborom in s prostim dostopom. Namenjena je objavljanju člankov s področja izobraževanja učiteljev in edukacijskih ved.

Cilji in namen

Revija je namenjena obravnavanju naslednjih področij: poučevanje, učenje, vzgoja in izobraževanje, socialna pedagogika, specialna in rehabilitacijska pedagogika, predšolska pedagogika, edukacijske politike, supervizija, poučevanje slovenskega jezika in književnosti, poučevanje matematike, računalništva, naravoslovja in tehnike, poučevanje družboslovja in humanistike, poučevanje na področju umetnosti, visokošolsko izobraževanje in izobraževanje odraslih. Poseben poudarek bo namenjen izobraževanju učiteljev in spodbujanju njihovega profesionalnega razvoja.

V reviji so objavljeni znanstveni prispevki, in sicer teoretični prispevki in prispevki, v katerih so predstavljeni rezultati kvantitavnih in kvalitativnih empiričnih raziskav. Še posebej poudarjen je pomen komparativnih raziskav.

Revija izide štirikrat letno. Dve številki sta v angleškem jeziku, dve v slovenskem. Prispevki v slovenskem jeziku imajo angleški povzetek. Številke so tematsko opredeljene, v njih pa je prostor tudi za netematske prispevke in predstavitve ter recenzije novih publikacij.

Contents

Varia

Reviews

Editorial

The theme of the first issue of volume three of *CEPS Journal* is sustainable development in education. The main purpose of this issue is a discussion of the concepts and implementation of the principles and guidelines of sustainable development in education.

The principle of the sustainable development of society conceives the development of human society and its influence on nature in such a way that it organises and modifies the satisfaction of needs in various areas, so that present generations do not threaten the satisfaction of the needs of people and other living beings in the future. Thus, education for sustainable development encompasses content from natural sciences and technical studies (environmental protection, the development of contemporary technology), social sciences (politics, economic development) and the humanities (ethical questions, responsibilities and social development).

We wanted to stimulate a discussion of scientifically determined facts and findings on the influences of human beings on the natural environment and the development of contemporary societies based on the principle of sustainable development, particularly those that are suitable for inclusion in preschool and primary school. The authors were invited to submit articles that substantiate the principle of sustainable development as a specific and clearly identifiable principle of education, on both the levels of concept and practice (knowledge, ethics, goals, values). We also suggested individual themes and educational strategies for encouraging sustainable development on all levels of schooling and in various subject areas (natural sciences, technical studies, social sciences and the humanities), for example 1) the connection of the economy with the environment (especially the impacts of the economy on the natural environment), 2) the connection of specific production methods in agriculture and industry, and the environmental difficulties and controversies associated with them, 3) the connection of knowledge of the environment with a candid analysis of history and politics, 4) the connection of economics, production and consumption patterns with the responsibility of companies and states, as well as of the international community, 5) the management of natural resources and the protection of biological and regional diversity, 6) education that encourages satisfaction with environmentally friendly activities, e.g. how to reduce the economic demands for transport and the use of energy, and 7) the principles and cases of environmental protection and the efficient use of energy as maxims of innovation and the development of new technologies, etc. In consultation with the editors of this issue, it was also possible to select other approaches to the theme.

In this issue of *CEPS Journal*, five authors from different countries, including Austria, Sweden, Germany and Slovenia, discuss in their papers the importance of sustainable development in science and art education. One paper can be found in the Varia section.

The paper by Franz Rauch and Regina Steiner entitled *Competences for Education for Sustainable Development in Teacher Education* presents authors' views on competences in the context of cross-curricular themes, such as sustainable development and education for sustainable development. The authors present these competences especially in the light of the United Nations Decade for ESD (2004–2015). Recent literature on education for sustainable development lists a number of competences for education for sustainable development in various fields, with the exception of teacher education. In the Austrian research project KOM-BiNE (Competences for Education for Sustainable Development in Teacher Education), as part of a large-scale EU project, a competence model for education for sustainable development for educators was developed. The KOM-BiNE competence model consists of areas of competences within fields of action. The constituent elements of the competence model are described by the authors in detail and are illustrated by examples.

The second article, *Respect for Nature – A Prescription for Developing Environmental Awarenes in Preschool*, by Eva Ärlemalm-Hagsér, illustrates sustainability as the striving for an environmentally sustainable world and respect and care for the non-human world, as well as efforts to establish social, economic and political justice for all human beings. This paper deals with education for sustainability in the Swedish pre-school, from two perspectives: first, the views held concerning the relationship between humans and nature; second, young children's participation and agency. The theoretical part presents the theory behind the study with a case study approach. The empirical material is derived from 21 applications from Swedish preschools to be certified with 'The Diploma of Excellence in Sustainable Development' (Swedish National Agency for Education). The main findings show that few critical questions have been raised about the human-nature relationship in the applications, even though views concerning the connectedness with, and care and respect for the natural world are emphasised. Children's participation and agency are neglected in a structure of ready-made views, activities and working methods already imbedded in the current pedagogical practices. Implications for research and practice would be to further explore how the understandings of the relationship between humans and nature are constructed within early childhood education.

In the paper entitled *Live What You Teach & Teach What You Live: Student Views on the Acceptability of Teachers' Value-Related Statements about*

Sustainability and Climate Change, Gregor Torkar reports the results of a survey among pre-service and in-service students of pre-school education and students of environmental sciences on the acceptability of value-laden statements made by their university teachers on issues of sustainable development and climate change. The results show that the students expect their teachers to promote the principles of sustainable development. The majority of students considered unacceptable any teacher's statement that would throw doubt on the cause or necessity to act against climate change. Teacher's statements emphasising global issues that have, or could have, a direct impact on developed countries (e.g. climate change) received higher support than those global questions that impact underdeveloped or developing countries more (e.g. poverty, child labour, access to natural resources). In conclusion, it is emphasised that teachers should assist students in developing their own moral positions on complex issues such as sustainable development and climate change. Structured discussion techniques, such as panel discussion, forum and debate, should be regularly and carefully implemented into lectures at the university level.

The fourth paper, by Mareike Burmeister and Ingo Eilks, entitled *Using Participatory Action Research to Develop a Course Module on Education for Sustainable Development in Pre-Service Chemistry Teacher Education*, presents the development of a course module on sustainability issues and Education for Sustainable Development in German pre-service chemistry teacher education. The module was inspired by empirical research findings about the knowledge base of student-teachers. It was created and cyclically refined using Participatory Action Research. Experiences gained during its three-year application are reflected upon by the authors, including feedback collected from student evaluation sheets. The results also showed that the participants responded extremely positively to the course. The student-teachers stated that the module was interesting, relevant and valuable for their later profession as high school chemistry teachers. They also emphasised that they developed specific competences in sustainability, and education for sustainable development.

The final contribution to this thematic issue about sustainable development in education is entitled *Visual Art Education: Between Spatial Sustainable Development and the Image of Architecture*, in which Beatriz G. Tomšič Čerkez considers the role of education and its implications in the formation of a critical and conscious user of architecture. In the development of educational strategies related to the sustainable development of our common space and environment, the main question is how to develop programs at all educational levels to promote critical and responsible attitudes towards the common environment covering all the aspects that shape the concepts of sustainable spatial

development. However, it is not possible to create strategies without proper information about the views of the students, so Tomšič Čerkez collected and analysed these views among secondary school students. The research based on the idea that in order to promote the education of critical and responsible »perceivers« of the environment, one of the most efficient critical attitudes towards the world would be to develop an unconditional connection of the art work with »everyday life conditions«.

At the end of this issue, we find one paper in the Varia section by Metoda Kemperl, entitled *Contemporary Art and Citizenship Education: The Possibilities of Cross-Curricular Links on the Level of Content*. Unlike the previous phenomenon of modern art, contemporary art strives to return to society and everyday life. Understanding contemporary art calls for active citizenship. This is particularly true in regard to so-called relational art, which demands active participation from the part of the viewer. This paper examines the possibilities of a connection of contemporary art and citizenship education in elementary schools; the analysis is focused on the curricula of the subjects of Art Education, and Citizenship and Patriotic Education and Ethics. It finds their link quite troublesome, since the absence of contemporary art from the curriculum of Art Education seems to be of a conceptual nature. The author suggests that via a more intense inter-institutional link between schools and contemporary art galleries and museums the common goals of art education and citizenship education can be realized. The paper therefore strives to show potential cross curricular links in content on three examples of participatory practices.

This issue of CEPS Journal ends with a review by Jasmina Kolbl of the book *Providing High Quality Science Knowledge Using Submicrorepresentations* by Iztok Devetak, published by the Faculty of Education of the University of Ljubljana (ISBN 978-961-253-076-1).

Iztok Devetak and Janez Krek

Competences for Education for Sustainable Development in Teacher Education

Franz Rauch*[1] and Regina Steiner[2]

Competences are intensively discussed in the context of cross-curricular themes, such as Sustainable Development and Education for Sustainable Development (ESD), especially in light of the United Nations Decade for ESD (2004–2015). Recent literature on ESD lists a number of competences for ESD in various fields with the exception of teacher education. A competence model for ESD for educators was generated in the Austrian research project KOM-BiNE (Competences for ESD in Teacher Education) as part of a large-scale EU project. The KOM-BiNE competence model consists of areas of competences within fields of action. The constituent elements of the competence model are described in detail and are illustrated with examples.

Keywords: Education for sustainable development, Competency model, Teacher education

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Kompetence za poučevanje za trajnostni razvoj na področju izobraževanja učiteljev

Franz Rauch* in Regina Steiner

V zadnjem času – še posebej v okviru desetletja Združenih narodov za Izobraževanje za trajnostni razvoj (2004–2015) – se veliko govori o kompetencah v povezavi z medpredmetnimi vsebinami, kot sta trajnostni razvoj in izobraževanje za trajnostni razvoj. Pregled novejše literature o izobraževanju za trajnostni razvoj nam pokaže, da obstaja kar nekaj kompetenc za izobraževanje za trajnostni razvoj na različnih področjih, razen na področju izobraževanja učiteljev. V okviru avstrijskega raziskovalnega projekta KOM-BiNE (Kompetence za izobraževanje za trajnostni razvoj na področju izobraževanja učiteljev), ki je bil del širšega projekta Evropske unije, je bil oblikovan model kompetenc, ki naj bi jih imeli učitelji za izobraževanje za trajnostni razvoj. Model KOM-BiNE sestavljajo kompetence za različna področja znotraj vzgojno-izobraževalnih dejavnosti. Podrobno so predstavljeni sestavni elementi tega modela, ki so prikazani tudi s konkretnimi primeri.

Ključne besede: izobraževanje za trajnostni razvoj, model kompetenc, izobraževanje učiteljev

Introduction

Several policy statements and research papers on education for sustainable development (ESD) have been published since the 1992 UN Conference on Environment and Development in Rio de Janeiro, and notably since the follow-up summit in Johannesburg, where education for sustainable development was a central theme. The proclamation of the United Nations Decade of Education for Sustainable Development for the period of 2005–2014 reinforced this trend. Various efforts have been made to develop alliances among stakeholders in global learning, citizenship education, intercultural learning, health education, peace education, etc, which can make a contribution to education for sustainable development. Surprisingly, there is broad concurrence in all these educational trends as to which competencies are required to tackle the current problems of humankind and the earth.

Several compilations of the skills needed to enable and promote sustainable development already exist (Nagel & Affolder, 2004; Tilbury & Wortmann, 2004). However, little has been published thus far on the skills that ESD teachers need, both in the formal and the informal sectors of education. The project on competencies for education for sustainable development (KOM-BiNE) addressed this specific issue.

The KOM-BiNE competency model provides a framework of reference and reflection for planning, implementing and reflecting on ESD activities. Moreover, it is intended to stimulate reflection or discussion on competencies in ESD, its further development possibly being part of that process (Rauch, Steiner, & Streissler, 2008).

Sustainable Development

»Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being« (United Nations Conference, 1992, p. 1).

So states the preamble to Agenda 21, the programme of action for the 21st century that was adopted by the World Summit for Environment and Development in Rio in 1992 by virtually all countries of the world.

Sustainable development is to solve the above problems:

»However, integration of environment and development concerns and

> greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can – in a global partnership for sustainable development« (United Nations Conference, 1992, p. 1).

As early as 1987, the World Commission for Environment and Development (WCEF) defined the concept of »sustainable development« (in the Brundtland Report Our Common Future) as a »development that meets the needs of the present without compromising the ability of future generations to meet their own needs« (Hauff, 1987, p. 43). This also implies that environmental conservation is no longer seen as a preferred means of preserving resources for future generations, a tenet held predominantly and unilaterally by the Western world, since:

> »Sustainable development requires us to acknowledge the interdependent relations between people and the natural environment. This interdependence means that no single social, economic, political or environmental objective be pursued to the detriment of others. The environment cannot be protected in a way that leaves half of humanity in poverty. Likewise, there can be no long-term development on this depleted planet« (UNESCO, 2002, p. 8).

A fair and equitable distribution of capital and natural resources, and of living and development opportunities, among all people in the world was the ambitious objective of the global community.

Sustainable development, however, is neither a general guideline, nor a clearly defined objective. The concept tells us little about how justice should be achieved. »The concept of sustainable development – as this document suggests – is not a simple one, and there is no road map to prescribe how we should proceed« (UNESCO, 1997, Preface). The way to reach that aim needs to be renegotiated for any given situation. All relevant stakeholders should be included.

A sustainable economy and society can only be the outcome of a social process of searching, learning and design (Rauch, 2004). The ability to constructively contribute different conceptions and interests will be of crucial relevance (Minsch, 2000). Sustainable development can serve as a guiding principle and framework for reflection on this process of such a search.

Homann (1996) called this function a »regulative idea«, a term he borrowed from Kant (1787/1956). According to Homan, regulative ideas serve as heuristics for reflection. They:

> […] steer the searching, research and learning processes in a given direction and direct it to a given focus; in this manner they keep us from

> poking about in a fog, incoherently and haphazardly. One needs at least an intuitive idea of what one is looking for. Without such pre-concepts, one cannot even formulate a reasonable question or identify a problem [...]. Heuristics may help determine the agenda, keep it under a common focus, attract attention to interdependencies in this field, but they cannot determine specific recommendations and proposals. (Homann, 1996, 38f)

The non-descriptiveness of sustainable development as a guiding principle can be perceived as a deficiency; sustainability can be discounted as an empty formula, even a container term (Eblinghaus & Stickler, 1996). Conversely, it may also be seen as an opportunity, even a precondition, to fulfil its function (Brand, 1997). The different interpretations to which this guiding principle lends itself give it a broad range of points to integrate. The term's lack of precision and its non-descriptiveness can make for a highly creative, diverse, yet dynamic field, which is oriented to a certain direction. In open societies, open notions are likely to resonate; this is precisely what is seen in the current debate on sustainable development. Sustainable development forms a favourable backdrop for reacting to the complex issues that contemporary society is facing in an adequate, manageably complex and not over-simplifying manner (Rauch, 2004).

The concept of sustainable development (SD) should not be limited to an overly pessimistic stock-taking of global problems, but rather should present an optimistic approach, i.e. a realisable vision of a desirable future. Society as a whole should therefore participate in creating such a vision for tomorrow, which takes into account the viewpoints and interests of all social groups and tries to balance them. As a regulative idea (see above), the objective of sustainable development should serve as a guiding principle that spells out the direction of where to go, but not the ways or means of reaching that goal. The aim should be a socially responsible, economically just and ecologically viable development that embraces humanity as a whole and includes opportunities for future generations to thrive (Steiner, 2011). This claim presents novel and ambitious challenges to individuals, as well as to society at large. Here, education is perceived as the master key to achieving a sustainable society: »It is widely agreed that education is the most effective means that society possesses for confronting the challenges of the future [...]« states UNESCO's policy report Education for a Sustainable Future (1997, paragraph 38). In 2000, the World Education Forum in Dakar noted that education constitutes the true basis for sustainable development (UNESCO, 2000). In late 2002, the United Nations Plenary Assembly thus proclaimed the Decade of Education for Sustainable Development.

Education for Sustainable Development – A Socio-Political Balancing Act

Education must be geared to social visions and cannot be detached from society. However, it must be clear about its limited impact. What legitimises education for sustainable development is therefore the regulative idea of sustainable development, not its concretisation (Kyburz-Graber et al., 2000; Rauch, 2004).

Teachers must be aware of the social dilemma in which ESD operates. However, as educators it is precisely their task to encourage and empower the next generation to partake in shaping society. Whenever facts are complex and controversial, whenever social and economic interests conflict, it is inadequate to »settle the facts without strengthening the persons«, Nagel and Affolter (2004) stated, borrowing a quote from Hartmut von Hentig. It is only individuals with a sufficiently developed strength of self who can act self-confidently on the basis of their own reflection, especially when issues are contradictory and complex (Heinrich et al., 2007).

ESD gives social concerns the appearance of social policy visions, an idea of a better world to which it can be directed. »Education is about hope and therefore about strong and existential feelings of future«, Oelkers (1990, p. 1) maintained. In this context, Künzli David (2007) mentions three requirements that pedagogical visions for Education for Sustainable Development must meet:

- While recognising social problems, a pedagogical vision must inspire optimism. With an orientation to the notion of sustainable development, it is possible to convey complex facts to pupils while giving them the feeling that the problems at hand can be tackled. Sustainable development does not deny problems, but presents them as fundamentally manageable. It can therefore generate and strengthen young people's optimism about the future.
- Reality is complex and pluralistic; therefore, a pedagogical vision must not propose a one-sided view. Here, the regulative idea concept is an appropriate reference frame for sustainable development. What is sustainable depends on the conditions imposed by where and when stakeholders find themselves, and requires a process of negotiation.
- Shifting social visions to the pedagogical level must not be the only measure by which to implement them. Education is only one measure that must go hand-in-hand with political and social transformations. Education for sustainable development does not aim at changing people's lifestyles, but at »empowering and encouraging them to participate in designing sustainable development and to critically reflect on their own action in this area.« (Künzli David, 2007, p. 30)

The recommendations for the Austrian educational strategy for sustainable development (Heinrich et al., 2007) explicitly outline and call for these structural preconditions. Jürg Minsch (2004) argued that progress can only be expected if society as a whole is seen as a system of innovation. Merely transforming individual skills does not suffice; what is needed is an appropriate scope for action and structures that allow individuals and social groups to commit themselves to a sustainable lifestyle.

The challenges presented by this concept require a reform of the general framework and of the organisational forms governing the educational system, but also innovation in teacher education that empowers teachers to take effective action within the system of education. However, there is no common definition of the competencies that ESD teachers should have.

The KOM-BiNE Competency Model

The above challenge prompted a large-scale EU project (CSCT) involving 15 teacher training institutions in eight European countries, in which Austria actively participated. In the course of this project, a competency model was elaborated for stakeholders in education for sustainable development (Sleurs, 2007), as well as an Austrian research project that was financed by the Austrian Federal Ministry of Education, the Arts and Culture for the further development of this model. This model of the competencies the ESD teachers should have acquired in training (KOM-BiNE) is discussed in the following.

The concept was differentiated and concretised (Rauch, Streissler, & Steiner, 2008, 2008a; Steiner, 2011) based on the interpretation of competence used by the OECD in the DeSeCo (definition and selection of competencies) project (Rychen & Salganik, 2003). In a dense phrase, Weinert defined competencies as:

> [The] cognitive abilities and skills which individuals have or can acquire to solve given problems, as well as the related motivational, volitional and social willingness and skills to apply such solution in variable context successfully and responsibly. (Weinert, 2001a, 27f)

In order to tackle a complex problem one must not only understand the facts, which in turn presupposes know-how and skills, but also mobilise motivation, feelings and values (Rychen & Salganik, 2003). Findings of neurological research show that thinking and feeling are inseparably linked (Gonczi, 2003). Reason exists in and for the entire being, not outside of it. To be successful, educational programmes must therefore also embrace the area of affection (de Haan, 2008).

Moreover, competencies do not exist independently of action and context, but are applied by acting in given contexts. Here is where the link and interaction between individuals and society becomes apparent. When formulating ESD competencies, attention should be paid not only to individual skills and abilities, but also to the setting and context (for teachers, e.g. classroom teaching, school community, society).

Weinert (2001b) further pointed out that the skills referred to in recent decades are team or group competencies, i.e. the interplay of individual competencies that enable a group to solve problems jointly. Especially in the context of ESD, cooperation and joint problem solving are of fundamental importance. Having to develop all ESD competencies on one's own is an endeavour that would certainly overtax any individual. As cooperation between all players in the area of ESD is paramount, the KOM-BiNE concept is not based on individuals, but on a group whose members pool their competencies for ESD in specific projects or issues and act as a team. Only with cooperation and targeted competency development within a team is it possible to fulfil the complex task presented by ESD.

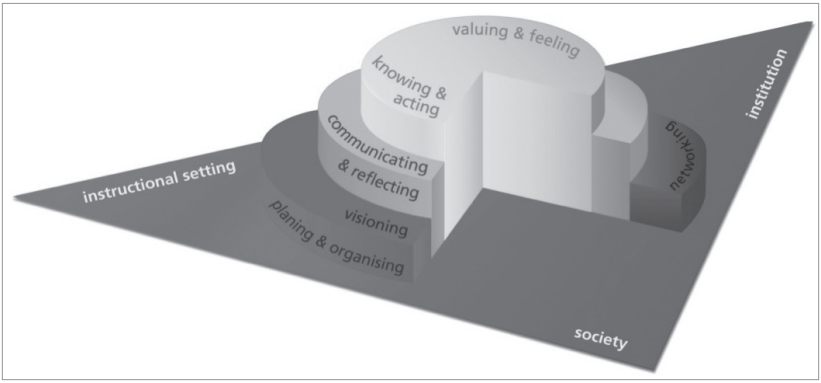

Figure 1: The KOM-BiNE model (Rauch, Streissler, & Steiner, 2008, p. 15)

Fields of action

Importantly, ESD competencies are competencies for teachers who are presumed to use their competencies in three different social settings. Three different fields of action exist:

- instruction, i.e. classroom teaching or extramural activities;
- participation in the design of one's own educational institution;
- reaching out to society, to the institution's closer and wider environment.

In the instructional setting, teachers need competencies to create a climate

that is conducive to learning, to arrange for an appropriate learning environment, to connect with the individual background and abilities of the learners, to select and use appropriate methods, and to create opportunities for active involvement. Within the institutional and societal settings, teachers must look for cooperation partners within and outside of their own institutions. While these are skills teachers generally need, they are paramount in the complex ESD setting, which requires a high degree of readiness to cooperate, to solve conflicts and to work in teams. Outside one's own institutions, the ability to establish contact and cooperation with other educational institutions and to arrange learning opportunities for the learners (e.g. through participation in local Agenda 21 processes) is needed. While such competencies are of course desirable in other educational settings as well, they are indispensable for ESD for the reasons stated.

The constituent elements of the competency model are described in detail in the following and, for a better understanding, illustrated by examples from ESD courses.

The core area of the model consists of more individual aspects, which are divided into four fields: »knowing and acting« (subject-matter knowledge, e.g. specific knowledge of ESD, and methodological know-how – ESD didactics and methodologies), »valuing« and »feeling«. These areas are closely interrelated.

»***Knowing***«

This revolves around:

- acquiring general knowledge of the contents of sustainable development and of education for sustainable development;
- connecting contents from the different disciplines and from social and cultural contexts, and being able to understand their interactions and interdependencies;
- becoming aware that knowledge is culture and value driven;
- tackling the uncertainty, preliminarity and contradictions of such knowledge;
- critically challenging knowledge and developing it further in a joint, proactive approach.

By way of illustration, the authors will report on a case study from a course held at the University of Klagenfurt on »Innovation in Teacher Education – Education for Sustainable Development (BINE)« for teacher-training institutions:

> Instead of a mere theoretical discussion of knowledge, the course programme provided for project-oriented and independent research on sustainable development. The participants in the BINE study course elaborated their own concept of sustainability, by studying, presenting and evaluating

concrete sustainability initiatives on site. They shared findings and matched them against published literature. In this way, the participating teachers were able to experience hands-on research-driven learning in their own work. In the project, it was essential to engage in a meta-reflection of the learning experiences for one's own teaching (Steiner, 2011).

»Acting«

In this area, the players know a repertoire of methods and strategies for how to apply the knowledge and are able to further develop these methods themselves. The aim is to foster the following skills among learners:

- determining and developing values;
- critical thinking and the ability to reflect;
- handling complexity;
- developing future perspectives;
- conflict-solving, communication and teamwork;
- problem-solving;
- participation and responsibility; as well as
- independent and self-reliant action.

The teachers focus on the action-orientation and contextualisation of the contents. In the formal system of education, they moreover know and use methods of supportive performance evaluation.

Awareness that the acquisition of competencies depends on domains is crucial. Knowledge and skills are acquired and applied in concrete action domains.

In a research project conducted at the University of Berne (BINEU – Education for Sustainable Development in the Lower Cycle) (Künzli David, 2007), the participating teachers had to implement the theoretical concept of ESD in practice and determine, relying on their knowledge and experience as secondary school teachers, whether pupils in the lower cycle of secondary schooling were able to understand the concept of ESD. They discussed which examples of ESD were useful in teaching, and jointly developed potential contexts and methods. In small groups, they then worked on detailed plans for their classes and were continuously supported by the project leaders. In this manner, they were able to develop ESD methods with scientific guidance, expand the methodological repertoire, share experiences, and learn from one another.

»Feeling«

In the area of feeling, the players try to empathise by e.g. listening, and putting themselves in the place of others (change of perspective). Their attitude is optimistic;

they are convinced that sustainable development is viable and that, together, they can make a contribution toward that end. They keep their enthusiasm for ESD alive and try to inspire others to do the same. Instead of promoting fears and frustration by doomsday rhetoric, they encourage learners in their commitment (empowerment).

By its nature, ESD is an optimistic, future-oriented concept built on the idea that a sustainable world is possible and that individuals can make a contribution.

The 'Global Learning' study course run by Südwind Österreich identified approaches of how to deal with devastating and depressing contents. It offers methods of how to handle such contents emotionally, by e.g. drama acting, painting etc. At the same time, it became clear that learners can only engage in such a form of learning if the teachers manage to create an appreciative atmosphere at school (Steiner, 2011).

»Valuing«

ESD is not a random, but a fundamentally normative concept. Some models exist that set out quality criteria for ESD (Breiting, Mayer, & Mogensen, 2005). »Values« has a multi-layered dimension. Firstly, it relates to values that the players themselves stand and argue for. Secondly, it relates to the educational objectives that are to be promoted or altered, such as a respectful attitude vis-à-vis others, overcoming black-and-white mentalities in the context of sustainable development, etc. Thirdly, it is about values that are lived and which manifest themselves as (unconscious or consciously reflected) attitudes and beliefs, e.g. regarding heterogeneity and diversity as an opportunity and using it as such in the teaching setting. It is also about how values per se are addressed in instruction, such as in debates on values.

Attention is drawn to methods of promoting »ecological judgment competencies«, as postulated by Susanne Bögeholz and Jan Barkmann (2003) and others. By this, they understand »the ability to apply factual ecological knowledge systematically to environmentally relevant values to be able to reach a judgment on which decisions are based.« (Bögeholz & Barkmann, 2003, p. 27) or, even beyond that, the »competence to make an ecological judgment […] the ability to reflect on one's own ethic values as well as a communication repertoire in the search for consensus and fair compromise« (ibid.). Teachers themselves should have those competencies; in the competency model, knowing methods to promote and apply these competencies would fall under the heading of »acting« (see above).

The experience of teachers in the Swiss BINEU project may serve as example: Teachers found a consistently open and appreciative attitude towards pupils to be one of the quintessential and at the same time most difficult requirements, explaining:

> It is not about training children to adopt a behaviour which has been recognized as »correct«, but about supporting them in taking decisions based on their own judgment. »In the past, I wanted to convey to the children

> something along the lines of: »What is good? What is the right way of doing things? »Black and white somehow. Now, with the concept of sustainable development, I have abandoned this altogether. (Steiner, 2011, p. 237)

As the focus was on being empowered to negotiate and to decide, and not to modify behaviours, the teachers had to tolerate and accept that pupils sometimes arrived at conclusions that differed from what they had planned. In such a situation, instruction no longer aims at pushing pupils towards making a better world, but empowers them to take independently justified decisions based on differentiated knowledge and reflected values.

»Communicating« and »Reflecting«

The middle layer of the competency model consists of »reflecting« and »communicating«, and refers to both outwardly directed activities (the outer layer, shown in purple, and to more individual areas (the innermost layer), thereby creating a link between the two.

Communicating is an ability without which all other areas are inconceivable. While communication is a sine qua non for planning, organising, and networking, it is not a matter of course for the more individual areas. Especially in ESD, however, communication is indispensable for:

- *values* – an appreciative dialogue that respects the opinions of others and takes them seriously,
- *feeling* – the ability to address highly personal issues, which tend to be given short shrift or completely left aside in teaching, and
- *knowing and acting* – e.g. sharing one's own experiences, personal knowledge and skills, not wanting to keep them to oneself, making them useful for others according to the »strength concept« (McKeown, 2002).

Reflection is important as a means to critically deal with oneself, one's own know-how and skills, values and feelings. Such reflection is equally important with regard to action taken, and is therefore related to the top layer of the KOM-BiNE model (knowledge and skills, values, feeling), as well as to the bottom level (developing visions, planning, organising, networking).

The teachers participating in the BINEU research project became aware of how crucial personal reflection and the further development of teaching is, because »education for sustainable development is a change of paradigm, not just a continuous further development, which makes the matter more difficult for many of those involved« (Steiner, 2011, p. 244). For the introduction of ESD, in-service teacher education, internal training events, team formation and support from networks are

often required as gate openers. For teachers, this may mean that reflection becomes second nature to them, using tools such as a learning diary or action research.

As another finding, teachers discovered that they had to use the allocated teaching time differently; they needed sufficient time to develop the relevant contexts, but also for allowing pupils to reflect on what they had learned, the insights they had gained, and whether this form of learning was useful for them.

»Visioning«, »Planning« and »Organising«

Sustainable development is an optimistic concept. It is not only about identifying and reacting to the problems of the present, but also about developing visions for the future. How do we want to live sustainably? Or with regard to teaching: What should learning look like in the future? Where are we heading with our teaching, our school in general? What are our goals?

This three-step approach consists of (1) setting objectives, (2) reflecting on what is possible in a given situation, and (3) translating these ideas into reality.

»Networking«

Building and maintaining networks within organisations and externally with other persons and institutions is vital for the ESD competences of teachers: With ESD being such an extremely complex field of action, in which diverging domains such as the economy, the environment, society and politics must be interlinked, and for which broad methodological knowledge is required, it is more or less impossible for teachers to act as independent individuals. They must set up contacts with others, engage in exchange, work in groups and teams, and cooperate with others and with their institutions. Successful cooperation within their institution as well as with external persons and institutions thrives on team work, communication skills, conflict management, tolerance, respect of heterogeneity and diversity, etc.

As one requisite competence, ESD teachers must be able to organise and moderate cooperation with non-formal educational institutions, in order to arrange for learning opportunities for pupils in and with extramural institutions. Pupils want to be taken seriously, act constructively in their own environment, and be able to leave an imprint (Posch, 1997). From a pedagogical perspective, however, the over-arching criterion is not only the implementation of successful activities or visible change in the surrounding world, but selecting opportunities for learning based on their inherent potential for learning (Breiting, Mayer, & Mogensen, 2005; Künzli-David, 2007). For this, teachers need communication as well as planning and organisational skills, so that they can create favourable teaching-learning settings at their own institutions as well as an appropriate framework for cooperation in the social environment.

Conclusion and Outlook

Based on the notion of sustainable development as a regulative idea outlined above, the link between sustainable development and education can be summarised as follows: sustainable development is part and parcel of a general educational task, aimed at empowering the young generation to design their conditions of life on a more humane scale. It is based on an educational notion which focuses on the self-development and self- determination of human-beings as they interact with, and reflect on, the world, with others, and with themselves. Education relates to the ability to contribute to the design of society in a reflected and responsible manner in terms of sustainable future development.

In the context of sustainable development, learning is equivalent to addressing issues of how to sustainably shape the future in concrete fields of action. This includes observation, analysis, assessment and design of a given context in creative and cooperative processes. »Reflected design competence«– not »blind action« or unreflective action patterns – is the primary goal of learning, which could be rooted in ecological, social and political dimensions. »Communities of learners« (teachers, pupils, students, researchers) jointly explore interrelations and options for acting, they intervene and reflect on action taken. What is addressed and called for specifically are a critical assessment of knowledge in the light of the present-day information overload, the development of self-worth, self-determination and self-reliance, as well as social competencies such as the ability to participate (Rauch, 2008).

The UN Decade of Education for Sustainable Development is an opportunity to promote existing initiatives and discourse on education and sustainable development in its varied manifestations such as environmental education, citizenship education, global learning, peace education, health education, consumer education and many others. It can offer a »forum« for exchange, reflection and – ideally – cooperation on the common path towards a sustainable future. A discourse in which all players participate on an equal footing requires common objectives that transcend individual interests. The all-important question is how the design of a sustainable future can be interlinked with education. Intervention and critical reflection (learning) are the essential cornerstones.

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Respect for Nature – A Prescription for Developing Environmental Awareness in Preschool

Eva Ärlemalm–Hagsér[1]

Embedded in the notion of sustainability lies a striving for an environmentally sustainable world and respect and care for the non-human world, as well as efforts to establish social, economic and political justice for all people. This paper deals with education for sustainability in Swedish pre-schools from two perspectives: first, the views held concerning the relationship between human beings and nature; second, young children's participation and agency. The theoretical underpinning is informed by critical theory with a case study approach. The empirical material is derived from 21 applications, which were from Swedish preschools to be certified with »The Diploma of Excellence in Sustainable Development« (Swedish National Agency for Education). The main findings show that few critical questions are raised about the human-nature relationship in the applications, even though views concerning the connectedness with, and care and respect for the natural world are emphasised. Children's participation and agency are neglected in a structure of ready-made views, activities and working methods already imbedded in the current pedagogical practices. Implications for research and practice would be to further explore how the understandings of the relationship between humans and nature are constructed within early childhood education.

Keywords: Early childhood education, Education for sustainability, Environmental ethics, Critical theory

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Spoštovanje narave – pristop, ki lahko uspešno razvija naravovarstveno zavedanje otrok v predšolskem obdobju

Eva Ärlemalm–Hagsér

Trajnost navadno povezujemo s prizadevanji za okoljskotrajnostni svet in spoštovanje ter s skrbjo za življenjska okolja pa tudi s trudom za oblikovanje socialno, gospodarsko in politično pravičnega sveta za vse ljudi. V prispevku je predstavljeno izobraževanje za trajnostni razvoj, ki ga vpeljujejo v švedskih vrtcih, in sicer z dveh perspektiv – odnos med ljudmi in naravo ter sodelovanje in angažiranost otrok pri trajnostnem delovanju. Teoretični del zajema pregled literature trajnostnega razvoja s poudarkom na študiji primera. Podatki v empiričnem delu so bili zbrani na podlagi 21 prijav švedskih vrtcev za pridobitev certifikata »The Diploma of Excellence in Sustainable Development« [Diploma odličnosti za trajnostni razvoj] (Švedska nacionalna agencija za izobraževanje). Izsledki kažejo, da se v prijavah ne pojavlja veliko kritičnih vprašanj glede odnosa med ljudmi in naravo, čeprav so poudarjeni vidiki povezanosti ljudi z naravo ter s skrbjo in spoštovanjem do narave. Sodelovanje in angažiranost otrok sta v trenutnih smernicah in metodah dela v pedagoški praksi na predšolski stopnji zanemarjena. Podrobneje bi bilo treba raziskati, kako se razumevanje odnosa med ljudmi in naravo razvija v predšolski vzgoji in izobraževanju.

Ključne besede: predšolsko izobraževanje, izobraževanje za trajnost, okoljska etika, kritična teorija

Introduction

It is widely agreed that education is an indispensable vehicle for improving the possibilities for a sustainable society and for enhancing sustainable lifestyles (Scott & Gough, 2004) in which children are acknowledged as environmental stakeholders (Agenda 21) with a right to meaningful participation in environmental issues. One key element that has been recognised is the importance of promoting a potentially life-long disposition towards caring for the environment among young children and youth (Davis & Elliott, 2003). Experiences of and interaction with nature have often been seen as a significant means for cultivating children's interest in and concern for the environment (Chawla, 1998, 1999; Ewert, Place, & Sibthorp, 2005; Wilson, 1997). Chawla and Flanders Cushing (2007) point out that notions about how pro-environmental behaviours are fostered often falter as a result of simplistic understandings about the relationship between experiences in nature and behaviour changes and stress that these issues are inextricably linked to politics and children's ownership and involvement. In recent decades, a more participatory and critical educational approach to the modification of environmental behaviour has been observed (Barrat Hacking, Barrat, & Scott, 2007; Chawla & Flanders Cushing, 2007). From previously being seen as passive vulnerable recipients, children are now acknowledged as competent, resilient and active agents, citizens with the right to be involved and to be heard in matters that affect them (Davis, 2010).

Recently, arguments have been raised in favour of research with critical and philosophical perspectives. For example, there is Kopinas' (2012) request for more explicit clarification of the underlying environmental ethics, in particular in education for sustainable development and education for sustainability research. In this perspective, both the ethics of research and the ethical point of view within pedagogical practice are of interest. The relationship between humans and nature has been discussed in terms of how humans position themselves in relation to nature, and a human centred-view has been inherited from the Enlightenment of seventeenth-century Europe (Merchant, 1994). In early childhood education, the power differentials in a contemporary human-nature relationship have not been questioned to any meaningful extent (Elliott, 2008; Halldén, 2011).

In order to explain the positions taken in this article, it is necessary to make some further clarifications. Education for sustainability here refers to a wider perspective that combines environmental education with social justice. In early childhood education, this can, according to Davis (2010, p. 28), be viewed as the need for a process to create »cultures of sustainability« that build

or transform thinking, practices and relationships. From this standpoint, this text rests on critical research in which preschools and early childhood education are viewed as sites for expressing ethics, politics and policies (Dahlberg & Moss, 2003; Qvortrup, 2008) since they are venues in a specific social sphere between the official and the private (Fraser, 2009; Habermas, 1998). In these places, childhood and children (James & James, 2004), children's rights, competence, participation and activism (Davis, 2010) are respected, and environmental ethical values (Wolff, 2011) as well as the idea of democracy as opportunities for recognition and rights (Fraser, 2003, 2009) are constructed and negotiated.

Education for sustainability in Swedish early childhood education

Swedish preschools have a long tradition of working with nature and environmental issues (Halldén, 2009, 2011; Sandell & Öhman, 2010; Ärlemalm-Hagsér, 2008) as well as valuing social and economic efforts to make the world a better place (Dahlbeck, 2012; Dahlbeck & Tallberg Broman, 2011).

In Sweden, the Ministry of Education and Science is responsible for the educational system, from preschool to university. Swedish preschools are available for children from one to five years of age, and 83% of all children in Sweden attend them (The Swedish National Agency for Education, 2011a). All Swedish childcare settings are called »preschools«. In 1998, the Swedish preschool was given a national curriculum. The Swedish National Curriculum for the Preschool (The Swedish National Agency for Education, 2011b) should be seen as a framework and guidelines for work in early childhood settings. The overall national goals are clearly set out both in the Education Act (by the Parliament) and in the Curriculum (by the Government). Democracy is described as a fundamental value and as the foundation for all activities.

The educational principles are built on care and education with play, learning and development operating hand in hand. Children are described as individuals with competences; i.e. active children with experiences, interest, knowledge and skills that should be the starting-point for everyday activities in early childhood settings. One significant aspect of the Swedish national curriculum is that goals are to »be strived for« and not »goals to achieve«.

Preschool staff are responsible for developing an environment in which the children become involved and make their own choices. Another task is to arrange supportive learning processes indoors and outdoors, which are designed to deepen children's knowledge and stimulate their desire for further learning.

A sense of exploration, curiosity and desire to learn should form the foundation for pedagogical activities. These should be based on the child's experience, interests, needs and views. The flow of the child's thoughts and ideas should be used to create variety in learning (The Swedish National Agency for Education, 2011b, p. 9).

Sustainable development as a concept is not mentioned in the policy context, but an ecological approach is one of the main issues to be implemented in all daily activities in preschool:

> Preschool should put great emphasis on issues concerning the environment and nature conservation. An ecological approach and a positive belief in the future should typify the preschool's activities. The preschool should contribute to ensuring children acquire a caring attitude to nature and the environment, and understand that they are a part of nature's recycling process. The preschool should help children understand that daily reality and work can be organised in such a way that it contributes to a better environment, both now and in the future. (The Swedish National Agency for Education, 2011b, p. 7)

It may, therefore, be assumed that educators in Swedish preschools have plenty of knowledge about environmental education and education for sustainability and how to put it into practice in a child-centred approach in preschool settings.

Sustainability from three critical standpoints

Davis (2010) and Pramling-Samuelsson (2011) called for new ways of learning about sustainability in early childhood education with a focus on participation, communication, problem-solving and critical thinking. As already mentioned, this article therefore focuses on preschools as places where environmental ethical values (Wolff, 2011) as well as the idea of democracy as opportunities for recognition and rights (Fraser, 2003, 2009) are constructed and reconstructed. I shall discuss this in two steps; the first comprises Davis's (2010) three theoretical underpinnings: a broadly-based rights dimension, a child competence dimension and a participatory and activist dimension; the second concerns the relationship between human beings and nature (Kronlid, 2005; Plumwood, 2002).

A broadly-based rights dimension

Child participation, in the sense that children should have the right to have their say in matters that concern them, is now an accepted principle in politics and in research. This is the result of a long transitional process both in research and in policy-making (James & James, 2004; United Nations, 1989). The Swedish Preschool Curriculum states that children's views should influence the learning environment and the planned activities in the early childhood context (The Swedish National Agency for Education, 2011b). The purpose is to give children the opportunity to develop understandings of democracy, to take part in decision-making, and to take responsibility for their own actions and the environment. Taking the child's perspective in an early childhood setting means paying attention to the child's own ways of expressing (meaning and) ideas, and to create daily practices that are in agreement with, consider or respect the child's ways of thinking and communicating (Johansson & Pramling-Samuelsson, 2003). Nevertheless, various studies show that children have relatively few opportunities to influence everyday preschool practices (Emilson, 2011; Johansson & Pramling-Samuelsson, 2003; Pramling-Samuelsson & Sheridan, 2003). According to Manson and Bolzan (2010), children's participation in practice can be expressed in different ways. It refers either to individual participation, in which the starting-point is the individual child's »participation as taking part in«, or to »involvement in decision making«, where children's collective voices and actions are considered to be both a value in the form of a democratic right and a pedagogical practice (see also Hart, 1997; Pramling-Samuelsson & Sheridan, 2003; Shier, 2001; Sommer, Pramling-Samuelsson, & Hundeide, 2011).

A child competence dimension

To understand the meaning of children as active participants in sustainable change, it is essential to understand how childhood, children's competence and children's autonomy have been constructed over time. It is now widely accepted that childhood is a social construction, and that children are daily affected by the view of adults and society (Qvortrup, 2008). It is also intertwined with social, cultural, economic and political structures (Kjørholt & Qvortrup, 2012). Childhood sociologists such as Prout (2005) and Lee (2001) have made distinctions between children as »human beings« and as »human becomings«. Lee (2009) has further theorised the being/becoming binary, claiming that both children and adults can be understood as being and becoming, depending

on the context. In Western societies, the rhetoric concerning children's rights is often heard and aims to challenge hegemonic ideologies that view children as innocent, irrational and pre-political (James & James, 2004). As mentioned earlier, children's participation and influence have an accepted position in politics and child practices, although they remain contested (Kjørholt, 2005) and can be interpreted as a site of struggling for recognition (Fraser, 2003, 2009; Fitzgerald, Greyham, Smith, & Taylor, 2010). In relation to sustainability and children's rights, it is my opinion that children already are »affected by environmental decision-making and have a right to be involved in it« (Barratt Hacking, Barratt, & Scott, 2007, p. 532). This means that they should have the right to have their say about, and influence, the activities and knowledge content within their preschool (Pramling Samuelsson & Sheridan, 2003).

A participatory and activist dimension

A cornerstone in the participatory and activist dimension is to recognise children as competent subjects and social actors with rights in society. To develop the skills of active and responsible citizenship, children need opportunities to practice them (Chawla & Flanders Cushing, 2007). Despite this, Davis (2009) showed in a research overview that (in the previous 12 years) there had been exceedingly few studies in which young children have been recognised as agents of change in connection with sustainability. This might originate from the view that younger children and childhood are not related to activism and politics, as they were previously seen in terms of incompetence and dependence (James & Prout, 1997). Davis (2008) described preschools where children actively share the process of »making a difference«, while Ritchie, Duhn, Rau and Craw (2010) described how early childhood centres participate in collective endeavours and wider community work, working with aspects of ethics of care, for self, for others and for the planet (Duhn, 2011). Siraj-Blatchford, Smith and Pramling-Samuelsson (2010) collated best practice experiences from young children's actions and learning about social, economic and environmentally sustainable development. Moreover, Mackey's (2012) study on young children's involvement in an environmental curriculum showed children that demonstrate their ability to comprehend concepts and issues of sustainability. Engdahl's and Rabušicová's (2011) research, in which 9142 children aged two to eight years were interviewed, showed that children expressed thoughts and ideas and solutions about the Earth, about human connectedness with nature, as well as about caring for the Earth and promoting a healthy environment. All these studies indicate that very young children are capable of relating to

sustainability issues in their daily lives and of thinking critically, and view themselves as serious stakeholders concerning the environment and the community.

The relationship between humans and nature

If young children have the competence to relate to sustainability issues in their daily lives, what knowledge, world views and human and natural values need to be critically reflected on? As Wolff (2011) stated: »Humans shape their relation to nature through their views of themselves, of others, and of the entire planet« (p. 329). One way to discuss the relationship of humans/nature can be to define it with the help of concepts such as anthropocentrism, ecocentrism and biocentrism, based on different intrinsic values of the human and the natural world. Anthropocentrism implies that human beings are the most significant species in the universe and/or the superiority of humans over nature. Biocentrism implies that all forms of life have intrinsic value, while in ecocentrism all forms of ecological ecosystems have intrinsic value (Plumwood, 2002; Sandell, Öhman, & Östman, 2005). Kahriman-Ozturk, Olgan and Tuncer (2012) explored preschool children's attitudes towards anthropocentrism and ecocentrism and found that children aged five to six appear to have ecocentric attitudes towards environmental issues. In contrast, when the researchers asked the children to clarify their reasons, an anthropocentric point of view was revealed. The researcher in that article emphasised the need for further research about early childhood education teachers and the environmental ethics they follow, a need to which the present article is responding.

The relationship between humans and nature can also be understood from a wide, a narrow or a mixed perspective, according to Kronlid (2005). A wide perspective is rooted in deep ecology (see, for example Naess, 1989) as it emphasises the interrelation between humans and the natural world as part of the entire cosmos. From a narrow perspective, humans are separated from nature as nature has become a resource for human use. From a mixed perspective, human connectedness to nature is positioned together with recognition of humans as both natural and cultural beings (Kronlid, 2005, pp. 202–216). Rephrased from Plumwood (2002, p. 132): »Human knowledge is inevitably rooted in human experience of the world, and humans experience the world differently from other species«. This perspective, as I understand it, is close to Bonnett's (2002) view on sustainability as a »frame of mind«. Although critical questions about the relationship between human being and nature are essential to understand the complexity of sustainability, they are seldom emphasised in early childhood education (Elliott, 2008; Halldén, 2011).

»An education that challenges sustainability builds on reinventions of basic educational theories and attends to human beings' self-relation, humans' mutual relations, and humans' relation to other parts of nature.« (Wolff, 2011, p. 349)

One pertinent question is whether the pedagogical practice in early childhood education is aiming for real change, where contemporary values, knowledge and injustices are challenged.

Research problem and research questions

This study focuses on how preschools describe learning for sustainability in their applications for a Swedish award, administered by the Swedish National Agency for Education. The award, entitled »Diploma of Excellence in Sustainable Development« (Utmärkelsen Skola för Hållbar utveckling), was initiated in the beginning of the new millennium by Swedish National Agency for Education supported by the Swedish government (SKOLFS 2004:20). The aim with the award was to enhance preschools and schools work with education for sustainable development, i.e. environmental, social, economic dimensions of sustainability.

Some of the findings from these research data have already been published (Ärlemalm-Hagsér, 2012). This paper focuses on two research questions: (1) what views regarding the relationship between humans and nature are described in the applications? And (2) in what ways are young children considered to be important and active participants and agents of change within the applications?

Method

This case study is part of a larger research project examining early childhood education and education for sustainability in Swedish preschools. The data comprised sixty-four applications made by preschools in 2008 and 2009 to obtain a Diploma of Excellence in Sustainable Development, collated 2009 from the Swedish National Agency for Education. A systematic and strategic selection process was applied to select data for analysis (Denzin & Lincoln, 2005).

All sixty-four applications were read several times in the initial phase, with a focus on what knowledge content the preschool staff connected to children's learning in relation to education for sustainability.

After the first readings, thirty-four applications were excluded, because twenty-three applications had desist, nine were incomplete and in two

applications preschools and schools had applied jointly, and this made it difficult to distinguish the preschool-specific content from the school.

In the next step, nine applications were excluded, because their texts mainly described the organisation of work or focused on preschool staff and did not describe what children would do or learn in the preschool. Finally, three applications that mostly cited the Swedish preschool curriculum were excluded. A total of eighteen applications were retained as the basis for the first analysis (Ärlemalm-Hagsér, 2012). In summary, the criteria for data selection can be described as follows:

- Complete applications, i.e. all questions were answered in the application.
- Applications received in 2008 or 2009.
- Applications include descriptions of knowledge content with a focus on children's learning, participation or participation and agency in connection to education for sustainability.

Analysis process

In the first study, a qualitative content analysis inspired by Granheim and Lundman (2004) was used. The analysis in the first study revealed two different themes of education for sustainability within the written application, a) pre-schoolers' sense of self and others, b) pre-schoolers' relationships with place, technologies and materials (see Table 1). Within these themes, nine knowledge content areas relevant to education for sustainability were identified. In a next step, these nine knowledge content areas were analysed with the conceptual tools chosen: participation and agency, and an affirmative and transformative approach (Fraser, 2003, 2009; Habermas, 1998).

Table 1. Overview of findings in the first part of the research project »Education for sustainability« in the Swedish preschool (Ärlemalm-Hagsér, 2012).

A. Preschoolers' sense of self and others					
The knowledge Content areas	A1 Children's Influence – everyone should have their say and influence	A2 Health and Wellbeing – to take care of their health and well being	A3 Cultural Diversity – expand and enhance understanding among children of other cultures and approaches	A4 Gender Equality – reinforcing children's possibilities of expanding their gender roles	A5 Social skills – to be kind to each other
The child's participant perspective	Participating as involvement in decision making	Mainly participation as »taking part in«, to some extent involvement	Participation as »taking part in«	Participation as »taking part in«	Mainly participation as »taking part in«, to some extent involvement
The perspective »children as agents for change«	Agents for change in relation to: individual interest, development and learning and to changes in the institution	In relation to individual development and learning and influences on the families	Lack of child-initiated actions in the descriptions	Lack of child-initiated actions in the descriptions	In relation to individual interest, development and learning. In relation to peers and to changes in the institution

B. Preschoolers' relationships with place, technologies and materials				
The knowledge content areas	B1 The importance of a physical and close relationship with nature	B2 Knowledge of and respect for nature – becoming aware ofhow it all fits together	B3 Knowledge of garbage management and to take responsibility for their environment	B4 Reuse and be gentle with material – how to be careful with materials
The child's participant perspective	Participation as »taking part in«	Participation as »taking part in«	Participation as »taking part in«	Participation as »taking part in«
The perspective »children as agents for change«	Agents for change in relation to: individual interests, development nd learning	In relation to individual interests, development and learning	In relation to individual development and learning and influences on families and on the neighborhood	Lack of child-initiated actions in the descriptions

In the second phase of this study, the focus lies on the views of nature and children's participation, inspired by two types of knowledge content: B1) the importance of a physical and close relationship with nature and knowledge of nature and B2) respect for nature, i.e. becoming aware of how it all fits together. In this re-analysis, a total of twenty-one applications, eighteen from the first selection and an additional two applications were selected by intentional sample i.e. preschools that wrote about the relationship between humans and nature.

Stake (2005) described case studies as occurring when a researcher explores a program, an activity, a process or individual/individuals in depth. In this study, the »case« was applications for the Swedish award Diploma of Excellence in Sustainable Development, which was used to investigate education for sustainability. The process implied at first that all statements about the human-nature relationship were identified in the written applications. Second, the qualitative content analysis was, in a further step, deepened with the theoretical analysis tools chosen (Denzin & Lincoln, 2005). All statements were analysed from the wide, narrow and mixed conceptual perspectives described earlier (Kronlid, 2005; Plumwood, 2002) and according to the ways in which young children were described as active participants and agents of change (Davis, 2010; Fraser, 2003, 2009).

Findings

The presentation of the findings is disposed as follows: (a) The connectedness with nature and care and respect for nature, (b) Becoming aware of how it all fits together and, (c) Child participation and agency as »taking part in«. The overall results are discussed in the discussion and implications for teaching.

The connectedness with nature and care and respect for nature

In all applications, outdoor activities are described as an important part of the daily routine in the preschools concerned. Outdoors may refer to the preschool playground or to a »pristine« natural area, e.g. a wood close to the preschool. When they visit the wood, the children are supposed to develop a relationship with nature, a relationship that is established and developed when they experience it through their bodies and their senses. Outdoor play and the connection with the natural world are described as having positive effects on children's future health and environmental awareness:

> To give children experiences of nature and maybe contribute to a feeling that they are a part of something bigger… Thanks to our outdoor

> practices, children long to be outdoors, and we hope this will encourage a future interest in environmental issues. (Preschool 10)
> Our approach is based on enhancing children's awareness of our way of living and being together can be adapted to create sustainable development… and how we together can take care of nature and the environment and what effects this will give us in the future. (Preschool 13)

Connectedness with nature and care for the natural world are themes that appear frequently in the texts. The connectedness can be interpreted as children's bodily interactions with nature and the natural elements. Here, nature can be understood as an object that can be experienced by the child, and this closeness to nature may be seen as a way to guarantee that they will lead good and healthy lives in the future. Another outlook is the feeling of being »a part of something bigger«. This represents a holistic view of the Earth where children (and adults) are seen as parts of a larger whole, but what this interrelationship consists of is not clarified. Care is often emphasised in the texts, for example, »we should take care of nature«. What »care« means in this specific context is not discussed to any great extent. Together, the connectedness with nature and the care of the natural world are interpreted as a mixed view of the humans-nature relationship.

Becoming aware of how it all fits together

Children are described as being involved in various activities at preschool in order to learn about different aspects of sustainability:

> In our preschool, the cycle of nature is a common theme in the daily work. It is a tradition in our preschool to work with nature and our environment. We stay outdoors daily in the playground, we go for walks in the woods and we do other excursions. The children can follow the seasonal changes, make discoveries, experiments, experience and learn about being careful about the different plants and animals. The Right of Public Access is shown in daily and natural contexts. All staff and children are involved in recycling, from the kitchen to the units and the educational work with the children, sorting out garbage, recycling and composting. We are trying to get the kids to understand the cycle of nature by making the children involved and responsible in the work of composting, growing and harvesting crops in our garden. The children follow the entire process. (Preschool 3)

> Children and adults get a sense of ecology and the cycles in nature. Which we think is important for everyone and for the willingness to take care of our environment, and also understand how dependent we are on a healthy planet. (Preschool 21)

The children and the teachers in these preschools work regularly with issues connected with learning about the environment and nature. It is learning about natural science as well as practical handling of waste, and gardening. In the excerpts, children and teachers together explore different ways of handling a complex world. The rhetoric is management-influenced, because if children learn about nature and how to handle different problems, such as waste disposal, an understanding of the meaning of sustainability develops automatically. This can be interpreted as an instrumental way of solving the complex problems as it uses ready-made solutions and actions for what a sustainable life can be like.

Child participation and agency as 'taking part in'

> We reflect together with the children on how to take care of nature. (Preschool 4)
> Show respect for nature, we talk with the children about how to show respect for nature. (Preschool 6)

In these excerpts, the preschools write that they reflect with the children about how to take care of nature, and in this they then talk about respect for nature, but what this entails is not clear. It seems that respect and care as well as connectedness with nature are themes that are taken for granted but not reflected upon in the pedagogical practice. Here children's voices, actions or initiatives are absent. Children seem to be viewed as passive recipients of knowledge. Children's participation and agency can be understood as »taking part in« and can be related to an individual interest in development and wellbeing. They can be seen as 'becoming' adults with an awareness of environmental issues.

Discussion and implications for teaching

If we truly take the political commitment to education for sustainability seriously and see education as a vehicle for aiding societies to achieve a sustainable way of living (Agenda 21), we must make critical analyses of the pedagogical practices currently being followed. Beliefs, knowledge and perspectives

within the everyday dialogues and activities in preschool mould children's meaning-making and understanding about life and the Earth.

The purpose of this article was to analyse how Swedish preschools communicate education for sustainability in written texts. The following aspects were focussed on: (a) the views of human-nature relationships within early childhood education, (b) in what ways young children are considered to be valuable participants and agents of change from these points of view.

In early childhood research, outdoor activities are acknowledged as contributing to wellbeing and development (Elliott, 2010) as well as fostering environmental awareness (Chawla, 1998, 1999; Ewert, Place, & Sibthorp, 2005; Wilson, 1997). In Swedish preschools, outdoor activities are part of the everyday routines and have been since they started in the mid-1800s, inspired by Rousseau and Fröbel. However, it is apparent that the human-nature relationship is seldom questioned in early childhood education (Elliott, 2008; Halldén, 2011). The texts examined in this study show that this relationship can be interpreted as a mixed one (Kronlid, 2005; Plumwood, 2002) with the view of human connectedness with nature and the urge to take care of and respect nature (compare with Kahriman-Ozturk, Olgan, & Tuncer, 2012). These perspectives seemed to be taken for granted as they were not explained or clarified in the texts. In each of these perspectives lies the philosophical and ethical assumption of the relationship between humans, nature and the Earth, views that need to be further scrutinised in early childhood education from both theoretical and practical points of view.

In the written texts, children are described as taking part in different activities in the pedagogical practice. These include science education ecology, the cycle of nature, seasonal changes, plants and animals, as well as waste disposal, recycling and gardening. It is obvious that the preschools are following the environment and nature goals in the National Curriculum (The Swedish National Agency for Education, 2011b), but in these descriptions the children's voices are silent even though words such as »reflect« and »talk about« are mentioned in the texts. In the Swedish preschool curriculum (The Swedish National Agency for Education, 2011b), children's right to express their views and influence the daily practice is heavily stressed. So how is it that these children's voices were not of interest within the issues about the relationship between human beings and nature? This question cannot be answered on the basis of this limited empirical material; I can merely refer to earlier researchers that have shown that child participation does not occur so easily (Emilson, 2011; Johansson & Pramling-Samuelsson, 2003; Pramling-Samuelsson & Sheridan, 2003). Children and participation still seem to be struggling for recognition (Fraser, 2003, 2009; Fritzgerald, Greyham, Smith, & Taylor, 2010).

This study shows that children take part in activities considered to be education for sustainability in the Swedish preschool. Pedagogical approaches like these are argued to be crucial parts of education and sustainability (Davis, 2010; Pramling-Samuelsson, 2011), as well as creating processes for »cultures of sustainability« that build or transform thinking, practices and relationships (Davis, 2010). However, the underlying pedagogy, participation, communication, problem-solving and critical thinking are still not acknowledged in the written text to any great extent.

This can give some implications for teaching as this shed light on and brought detail to general problems of understanding being taken for granted and institutional practices.

In this article, I have sought to argue for the need for a critical discussion about education for sustainability in early childhood education. As respect for nature is considered to be a recipe for developing environmental awareness in preschool, my question is (again): how is it that these critical issues about the relationship between humans and nature are ignored in early childhood education? Is it the age of the child or/and are the pedagogical contents taken for granted?

There is no political vacuum and children in the world are affected by environmental problems and inequalities (Davis, 2011), as well as bearing the consequences of political decisions that are currently being made or not made. Education for sustainability in pedagogical practice needs to be challenged, and one way is to acknowledge children's thoughts, ideas and initiatives and to create opportunities for shared critical thinking. I conclude this article with some words from Elliott (2010): »There is no single experience in nature that creates a sustainability frame of mind, but many over time, crucially beginning in early childhood« (p. 69).

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Live What You Teach & Teach What You Live: Student Views on the Acceptability of Teachers' Value-Related Statements about Sustainability and Climate Change

Gregor Torkar[1]

This paper presents the results of a survey among pre-service and in-service students of pre-school education and students of environmental sciences on the acceptability of value-laden statements made by their teachers on issues of sustainable development and climate change. Fifteen statements were provided, and students had to choose among the options »acceptable statement«, »unacceptable statement« and »cannot decide«. The questionnaire was completed by 139 students from two universities in Slovenia. The results show that the students expect their teachers to promote the principles of sustainable development. The majority of students considered any teacher's statement that would cast doubt on the cause or the necessity to act against climate change to be unacceptable. Teacher's statements emphasising global issues that have, or could have, a direct impact on developed countries (e.g. climate change) received higher support than those global questions that more heavily impact underdeveloped or developing countries (e.g. poverty, child labour, access to natural resources). In the conclusion, it is emphasised that teachers should assist students in developing their own moral positions on complex issues such as sustainable development and climate change. Structured discussion techniques, such as a panel discussion, forum and debate, should be regularly and carefully implemented into lectures at the university level.

Keywords: Sustainable development, Climate change, University education, Environmental education, Teaching, Values

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Živi tisto, kar poučuješ, in poučuj tisto, kar živiš: pogledi študentov na sprejemljivost učiteljevih vrednotno orientiranih izjav o trajnosti in podnebnih spremembah

Gregor Torkar

V članku so predstavljeni izsledki raziskave med študenti predšolske vzgoje in študenti okoljskih znanosti o njihovih pogledih na sprejemljivost učiteljevih vrednotno orientiranih izjav o trajnostnem razvoju in podnebnih spremembah. Študentje so se opredelili do petnajstih podanih izjav. Pri tem so lahko izbirali med odgovori »sprejemljiva izjava«, »nesprejemljiva izjava« in »neodločen/-a«. Vprašalnik je izpolnilo 139 študentov iz dveh slovenskih univerz. V izsledkih ugotavljamo, da študentje od svojih profesorjev pričakujejo, da spodbujajo in podpirajo trajnostni razvoj. Večina vprašanih študentov tudi ne odobrava, da bi ti podvomili o vzrokih in nujnosti ukrepanja zoper podnebne spremembe. Podpora tistim izjavam, ki poudarjajo globalna vprašanja, ki imajo ali bi lahko imela neposreden vpliv na razvite države (npr. podnebne spremembe), je bila pri študentih večja kot podpora izjavam o globalnih vprašanjih, ki bolj prizadenejo nerazvite in razvijajoče se države (npr. revščina, otroško delo, dostop do naravnih virov). V sklepnem delu je poudarjena vloga učiteljev, ki morajo pomagati učečim pri razvijanju lastnih moralnih pogledov na kompleksna vprašanja, kot so trajnostni razvoj in podnebne spremembe. Strukturirane tehnike diskusije, kot so okrogla miza, forum in razprava, morajo biti na univerzitetni ravni zato redno in ustrezno implementirane.

Ključne besede: trajnostni razvoj, podnebne spremembe, univerzitetno izobraževanje, okoljsko izobraževanje, poučevanje, vrednote

Introduction

In recent centuries, humanity has benefited from development that has enriched our lives, but also caused unprecedented environmental change. The Earth Summit in Rio de Janeiro (1992) challenged humanity to reduce its impact on the Earth. The assembled leaders adopted Agenda 21 for achieving sustainable development. Agenda 21 addresses the pressing environment and developmental problems and also aimed at preparing the world for future challenges in order to attain the long-term goals of sustainable development. The preamble to Agenda 21 commences with the following statement:

> Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can – in a global partnership for sustainable development. (Agenda 21, 1992)

In principle, there is an agreement that social and economic development must be ecologically viable at present and in the long term, and that this is the task of the global community. However, when it comes to specific national and international policies and real actions in order to enable more sustainable living, agreements and initiatives (for example Agenda 21), it often breaks down. This is because such policies often hurt personal or group interests and values, leading to normative conflicts (Mulder, 2010).

Modern environmental scientists have the ability to foresee the future, but they are also often cursed in that no one believes them (Clayton & Myers, 2009). One of the greatest challenges is to make scientific understandings and public (political) perceptions consistent. Many advocates of sustainable development recognise that a transition to global sustainability will require changes in human values, attitudes and behaviours (e.g. Raskin et al., 2002). Values are often invoked in discussions on how to develop a more sustainable relationship with the environment. Values are general preferences for ways of acting and underline more specific attitudes, preferences and behaviours (Dietz, Fitzgerald, & Shwom, 2005).

A considerable number of studies concerning values in environmental research are based on Schwartz's Value Theory (Schwartz, 1992). Schwartz defined a value as »a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity« (Schwartz, 1992, p. 21). Values provide an efficient instrument for describing and explaining similarities and differences between persons, groups, nations, and cultures (Rokeach, 1973). The importance of these values may differ across persons and cultures, but the structure of these values is believed to be universal (Schwartz, 1992). Results from multinational studies supported the notion that values underlie environmental concerns and environmental worldviews (Schultz & Zelezny, 1999). The values of self-transcendence tend to be positively correlated with measures of biospheric environmental concerns and negatively with egoistic environmental concerns, whereas values for self-enhancement tend to correlate negatively with biospheric concerns and positively with egoistic concerns (Schultz & Zelezny, 1999). Strong support for the cross-cultural generalisability of the relationship between values and environmental attitudes and on the structure of environmental concern was reported (Schultz et al., 2005). Their analyses of the relationship between values and environmental behaviour show evidence of a positive relationship with self-transcendence values.

Environmental education, formal and informal, has the potential to affect a wide range of individuals and provides an opportunity to promote human-environmental harmony; it focuses on people's abilities to increase their understanding over the long run, affecting their attitudes, behaviour and worldviews in general (Clayton & Myers, 2009). Formal school systems, from the pre-kindergarten to the graduate level, employ a wide range of methods, for example traditional courses, field trips, supplementary materials and community investigations (Volk & MacBeth, 1998). Also relevant are informal environmental education settings, for example zoos, camps, park interpretative programmes, outdoor learning, citizen science projects, professional development, industry-based learning, etc. (Clayton & Myers, 2009). Informal environmental education has a less structured curricula and could be more characterised as »free choice learning«. This means individuals voluntary use information given or displayed (e.g. leaflets, posters, web pages, magazines, books, movies, radio, television, etc.) (Clayton & Myers, 2009). Wals (2007) described this as a shift in emphasis from education to social learning, where people form and exchange ideas through many types of social interaction.

Success of environmental education also depends on the psychological processes and readiness of those being educated (Clayton & Myers, 2009) and

educators (Torkar, 2010). Clayton and Myers (2009) particularly emphasised the importance of cognitive development and environmental knowledge (with special attention to knowledge of biology and ecology), affective and motivational factors (especially connection to nature and feelings about the self's ability to achieve effects in the world), and actual behaviour (participating, taking action and problem-solving).

Research problem and research questions

»Live what you teach & teach what you live« is a principle in life that should be applied to many fields, including environmental education. This implies that people should behave in accordance with the values they teach. Korfiatis (2005) wrote that no science teaching can avoid communicating messages about how we humans look upon and treat nature. This statement is even more valid in the field of environmental education and education for sustainable development, where complex global problems, for example climate change, are confronted. The foundation that environmental education stands on is the position that knowledge is socially constructed, that there are cognitive, economic, moral and philosophical aspects to be considered and that there are no certainties in either theory or practice (Selby, 2007).

In 1975, an international United Nations Educational, Scientific, and Cultural Organisation (UNESCO) workshop in Belgrade produced a statement on environmental education aims, which still defines the mainstream in the field (Clayton & Myers, 2009, p. 3):

> The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions to current problems and prevention of new ones.

If environmental education is meant to help children learn and care for the environment, then those responsible for this (e.g. teachers) must know the types of learning experiences that help produce active and informed minds (Palmer & Neal, 1994). Teachers are, or should be aware, of social pressures on them to act as model citizens and that their actions help establish the next generation's moral compass (Jacobson, McDuff, & Monroe, 2006).

The main aim of the present study was to identify teachers' value-laden statements about sustainable development and climate change that are (not) acceptable for students. There is little known about students' acceptability of

teachers' value-laden statements about environmental issues. Mulder (2010) explored the acceptability of value-laden statements among sustainable development teachers in engineering, engineers and engineering students. Sustainable development teachers in engineering were more critical about the value-laden statements than their students and professional engineers. He concluded that »teachers should help students identifying normative issues in work that seems to be of a technical nature and should help students in building up their own argument in these cases« (p. 83). This requires active learning processes or practice (Mulder, 2010). The teacher who wishes to be a successful environmental educator should become an example of a sustainable life style and not just preach about it. Dewey (1997) stated that an example is more potent than a principle, and a teacher's best conscious efforts may be more than counteracted by the influence of personal traits that he or she is unaware of or considers unimportant. Torkar (2009) discovered that teacher's attitudes and behaviours towards the environment and nature protection were influenced by values expressing universalism, moral norms, personal and spiritual growth, and self-transcendence. Kollmuss and Agyeman (2002) reported that people often profess positive environmental attitudes but do not engage in corresponding behaviour. This inconsistency was confirmed in a previously mentioned study by Torkar (2009). In the school environment, teachers are closely observed by students; therefore, a teacher's strong moral position must be an implicit part of the knowledge the teacher wants children to absorb (Krasko, 2004).

Two groups of students with different levels of scientific knowledge concerning environmental issues were questioned in order to determine if their environmental knowledge influenced the acceptability of a teacher's value-laden statements. It is also necessary to know how students' disagreements with statements are discussed in the classroom. Therefore, students' willingness to express their disagreement with the teacher's value-laden statements in the classroom was investigated.

Method

Participants

The survey was carried out in fall 2010, winter 2010–11 and fall 2012. A questionnaire was completed by 139 respondents from two universities in Slovenia: 49 students of environmental sciences (SES) in their last year of study (5th Semester) and 90 pre-school education students (SPE) in their second year of study (3rd Semester). More details concerning the sample are presented in Table 1.

Table 1. Sample details

		SES	SPE
Gender	Male	8	1
	Female	41	89
Age	Average	22.6	27.3
	Min.	20	20
	Max.	31	50

Research design

Participating students from pre-school education completed the questionnaire before a biology course session at Faculty of Education University of Ljubljana. They were in their second year of a three-year study programme. Participating students from environmental sciences were in their final (third) year of the study programme in the Faculty of Environmental Sciences University of Nova Gorica. They completed the questionnaires before a nature conservation course session.

The questionnaire consisted of 15 value-laden statements focused on three main dimensions: (1) ecological, social and economic dimensions of sustainable development, (2) developed-developing countries, and (3) climate change. Some questions were taken from the questionnaire developed by Mulder (2010). For each given value-laden statement students had to choose among options »acceptable statement«, »unacceptable statement« and »cannot decide«. Students were also asked how they reacted to unacceptable statements from their teachers. Students needed 10 minutes on average to answer the questions.

Descriptive analysis of the results was conducted. The differences between groups of students were tested with a $\chi 2$ test. We also compared students' views on the acceptability of value-laden statements and their respond when hearing them (Figure 1).

Results

The acceptability of 15 value-laden statements about sustainable development (SD) and climate change (CC) made by teachers was evaluated by students of pre-school education (SPE) and of environmental sciences (SES). The results for the two groups of students are presented separately and in total. The results in Table 2 show that students expect their teachers to promote the principles of sustainable development and to behave in accordance with what

they teach. Seven out of ten students found any family planning policy that would control number of births and stabilise the population on the planet to be unacceptable. Less than two thirds of the respondents accepted a teacher's statements supporting global equity of access to natural resources, the responsibility of developed countries to promote sustainable development and the eradication of poverty in underdeveloped and developing countries. Half of the students found the statement that calls for opposition toward government that will not lead us to sustainable development to be unacceptable. Only three out of five students support their teachers' statements that child labour is unacceptable in all countries of the world.

However, the majority of students considered any teacher's statement that would throw doubt about the cause or necessity to act against climate change to be unacceptable (Table 3). For example, students found unacceptable a teacher's statement that would consider climate change in a positive way, just because some areas could, as a result, have a warmer climate and lower bills for heating. Students also found to be unacceptable the statement that humans are not a cause of climate change; therefore, there is no need for action.

Both groups of students found teacher's carelessness about sustainable development or climate change to be highly unacceptable.

However, there are only two statistically significant differences between groups. Students of environmental sciences were more supportive of the statement that calls for opposition toward governments that do not support sustainable development ($\chi 2 = 15.317$, $p = 0.000$). Another significant difference between the groups of students was their view on the acceptability of the statement that was supporting new family planning programs that would regulate the human population on the planet ($\chi 2 = 10.179$, $p = 0.006$). Students from preschool education found this teacher's statement more unacceptable, while students of environmental sciences expressed a more neutral position towards the statement.

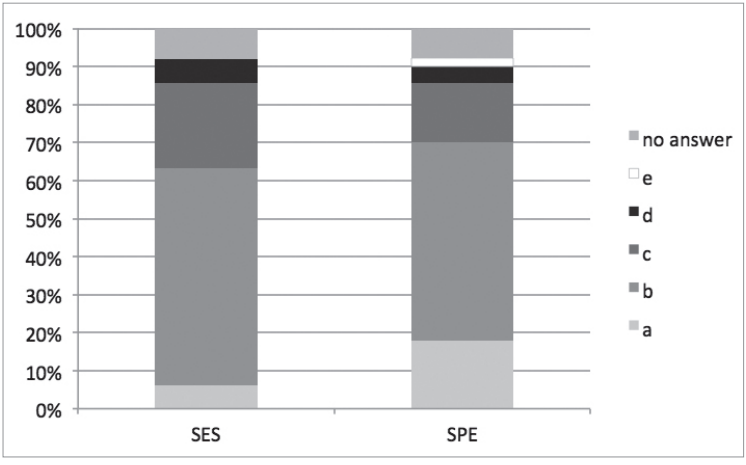
Table 2. Value-laden statements made by teachers on issues of sustainable development (SD) and their acceptability for students of environmental sciences (SES) and pre-school education (SPE).

Teacher's statement	Sample	Acceptable		Unacceptable		Neutral	
		f	f%	f	f%	f	f%
1. I do not care about SD; I just make a living teaching it!	SES	2	4.1	45	91.8	2	4.1
	SPE	7	7.8	76	84.4	7	7.8
	Total	9	6.5	121	87.1	9	6.5
2. We have to fight against a government that does not support SD.	SES	20	40.8	23	46.9	6	12.2
	SPE	12	13.3	49	54.4	29	32.2
	Total	32	23.0	72	51.8	35	25.2
3. Child labour is intolerable in all countries of the world.	SES	33	70.2	11	23.4	3	6.4
	SPE	52	57.8	31	34.4	7	7.8
	Total	85	62.0	42	30.7	10	7.3
4. Developed countries should be responsible for eradication of poverty in underdeveloped and developing countries.	SES	26	53.1	7	14.3	16	32.7
	SPE	63	70.0	11	12.2	16	17.8
	Total	89	64.0	18	12.9	32	23.0
5. SD means stabilisation of population numbers; therefore, we need family planning programs.	SES	7	14.3	27	55.1	15	30.6
	SPE	3	3.3	71	78.9	16	17.8
	Total	10	7.2	98	70.5	31	22.3
6. Developed countries have a responsibility to support SD in developing countries.	SES	26	53.1	9	18.4	14	28.6
	SPE	56	62.2	11	12.2	23	25.6
	Total	82	59.0	20	14.4	37	26.6
7. Developed countries should do more to close their borders to economic migrants from Africa and Asia.	SES	6	12.2	32	65.3	11	22.4
	SPE	7	7.8	61	67.8	22	24.4
	Total	13	9.4	93	66.9	33	23.7
8. Everybody should become a vegetarian.	SES	2	4.1	41	83.7	6	12.2
	SPE	1	1.1	81	90.0	8	8.9
	Total	3	2.2	122	87.8	14	10.1
9. There is nothing wrong with killing whales.	SES	2	4.2	44	91.7	2	4.2
	SPE	0	0.0	87	96.7	3	3.3
	Total	2	1.4	131	94.9	5	3.6
10. All people on the planet should have equal rights to access natural resources, like oil and natural gas.	SES	31	64.6	3	6.3	14	29.2
	SPE	52	57.8	18	20.0	20	22.2
	Total	83	60.1	21	15.2	34	24.6
11. As long my teaching salary is so low, I am not going to advocate SD.	SES	0	0.0	47	95.9	2	4.1
	SPE	3	3.3	85	94.4	2	2.2
	Total	3	2.2	132	95.0	4	2.9

Table 3. Value-laden statements made by teachers on issues of climate change (CC) and their acceptability for students of environmental sciences (SES) and pre-school education (SPE).

Teacher's statement	Sample	Acceptable		Unacceptable		Neutral	
		f	f%	f	f%	f	f%
12. CC is not caused by humans, so we need not reduce CO2 emissions.	SES	3	6.3	41	85.4	4	8.3
	SPE	0	0.0	84	93.3	6	6.7
	Total	3	2.2	125	90.6	10	7.2
13. CC is positive, because it brings to some areas of the world a warmer climate and lower bills for the heating.	SES	1	2.0	45	91.8	3	6.1
	SPE	2	2.2	79	87.8	9	10.0
	Total	3	2.2	124	89.2	12	8.6
14. CC is punishment sent from God and we must now pay for our sins.	SES	0	0.0	49	100.0	0	0.0
	SPE	2	2.2	83	92.2	5	5.6
	Total	2	1.4	132	95.0	5	3.6
15. CC was made up by those who want to sell us expensive eco-products.	SES	2	0.9	44	19.2	3	1.3
	SPE	2	2.2	77	85.6	11	12.2
		4	2.9	121	87.1	14	10.1

Finally, students were asked to describe how they would most probably react to unacceptable value-laden statements made by their teacher (Figure 1).



Legend: a – I remain quiet, b – I become alert and mention my concerns to colleague(s), c – I publicly express my disagreement and discuss it in the classroom, d – I privately discuss my concerns with the teacher, e – I have not yet heard any unacceptable statements until now.

Figure 1. Student's reaction to unacceptable value-laden statements made by their teachers.

Most of the students would become alert and discuss the statement with colleague(s) in the classroom. Students from environmental sciences were more willing to express their disagreement with the teacher's statement and discuss it in the classroom or in private conversation with the teacher. Only two students had not yet heard any unacceptable statements.

Discussion and conclusion

The first and most important aim of the study was to investigate students' views on the acceptability of academics' value-related statements about sustainability and climate change. Overall, students found carelessness on the part of teacher regarding sustainable development or climate change to be highly unacceptable. The results show that students expect their teachers to promote the principles of sustainable development, which confirms the findings of other researchers (e.g. Jacobson et al., 2006; Mulder, 2010). It appears that statements emphasising global issues that have, or could have, a direct impact on developed countries (e.g. climate change) received higher support than those global questions that have greater impact on underdeveloped or developing countries (e.g. poverty, child labour, access to natural resources). This opens an important question about the personal or group interests and values that could harm global agreements and initiatives, for example Agenda 21. Humanity is facing some global environmental challenges that require some self-limiting of (regional) group interests that could have a negative effect on the standard of living in underprivileged communities.

Views on the acceptability of academics' value-related statements were investigated in two groups of students with different levels of knowledge about sustainable development and climate change topics. Many studies of knowledge and attitudes have found a significant relationship between the two variables (e.g. Olson, Bowman, & Roth, 1984; Prokop, Kubiatko, & Fančovičova, 2008; Torkar, Mohar, Gregorc, Nekrep, & Hönigsfeld Adamič, 2010). The aim was to discover whether the level of knowledge influenced the acceptability of a teacher's value-laden statements. In only two out of 15 statements were significant differences between groups found. Students of preschool education, with a lower level of environmental knowledge, found the statement that was supporting new family planning programs, which would stabilise the world population, more unacceptable; while students of environmental sciences were more supportive of the statement that calls for opposition toward government that does not support sustainable development. This also indicates a slightly higher level of activism and/or pro-active behaviour, among students of environmental

sciences, which was also noticed from the results presented in Figure 1 where a high degree of passivity or lack of confidence among students was noticed. Two thirds of the respondents would not express their disagreement with teacher's value-laden statements or discuss it with their teacher.

The complexity of sustainable development is well acknowledged. The more complex a subject is to learn, the less potential there is for students to achieve mastery of it through passive learning approaches (von Blottnitz, 2006). Mulder (2010) was convinced that the basic university teaching practice of the all-knowing lecturer who transmits one clear message to students is often perceived as preaching. He believes that it is far more useful to create confusion, because in this situation students are forced to think. Therefore, it is of great importance that teachers at all levels of education, particularly at universities, encourage students to clarify the moral dimension involved in issues of sustainability, and assist them in developing their own moral positions on such complex issues.

Of course, it is not sufficient merely to increase the frequency of verbal encouragements to participate in discussions. It is necessary to adjust the entire programme and curriculum, including goals for the subjects. More emphasis should be devoted to the development of skills, such as critical thinking and collaborative research, where information, ideas and opinions are shared. Structured discussion techniques, such as panel discussions, forums and debates, should be regularly and carefully implemented into lectures. Discussions can also be the main mode of learning. Well-run discussions can also help participants learn communication skills in the group and broaden their perspective. As it was emphasised in the introduction of this paper, environmental education stands on the position that knowledge is socially constructed, that there are no certainties in theory or in practice (Selby, 2007). Structured discussions should be essential techniques of educational experience. This can help us build a global partnership for sustainable development (Agenda 21, 1992).

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Using Participatory Action Research to Develop a Course Module on Education for Sustainable Development in Pre-Service Chemistry Teacher Education

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This paper describes the development of a course module on sustainability issues and Education for Sustainable Development in German pre-service chemistry teacher education. The module was inspired by empirical research findings about the knowledge base of student teachers. It was created and cyclically refined using Participatory Action Research. Experience gained during its three-year application will be reflected upon here, including feedback collected from student evaluation sheets. In the end, the participants responded extremely positively to the course. The student teachers stated that the module was interesting, relevant and valuable for their later profession as high school chemistry teachers. They also emphasised that they now felt more competent in the area of sustainability and ESD.

Keywords: Education for Sustainable Development, Chemistry Education, Participatory Action Research, Teacher Education

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Uporaba akcijskega raziskovanja z udeležbo pri razvoju učnega modula za izobraževanje za trajnostni razvoj pri bodočih učiteljih kemije

Mareike Burmeister in Ingo Eilks*

V prispevku je predstavljen razvoj učnega modula o trajnostnih temah in izobraževanju za trajnostni razvoj pri bodočih učiteljih kemije v Nemčiji. Modul je rezultat ugotovitev raziskave o predznanju študentov. Oblikovan je bil med cikličnim procesom akcijskega raziskovanja z udeležbo. Predstavljene so izkušnje na podlagi triletnega izvajanja modula in povratne informacije študentov, ki so bile pridobljene s pomočjo evalvacijskih vprašalnikov. Udeleženci so izkušnjo ocenili kot zelo pozitivno. Modul se jim je zdel zanimiv, pomemben in potreben za njihov poklic srednješolskega učitelja kemije. Poudarili so tudi, da se zdaj počutijo kompetentnejše na področju izobraževanja za trajnostni razvoj.

Ključne besede: izobraževanje za trajnostni razvoj, kemijsko izobraževanje, akcijsko raziskovanje z udeležbo, izobraževanje učiteljev

Introduction

In a review of the role of Education for Sustainable Development (ESD) for and in secondary chemistry education, Burmeister, Rauch and Eilks (2012) previously discussed different justifications for covering ESD issues in the classroom, in teacher training, and in educational research. The special emphasis that chemistry education should have was demonstrated by showing the unique economic role of industrial chemistry in every developed society. The chemical industry provides most of the raw materials necessary for every other type of business and undertaking. It is the foundation of modern energy supply, agriculture, materials, communication, biotechnology, and medicine (Bradley, 2005). Burmeister et al. (2012) also referred to the impacts that chemistry-related technologies and industry have on the environment and on the social development of any society, both at local and regional levels.

Therefore, there is a justifiable need to implement learning about sustainability issues and ESD into chemistry teacher education. This paper reflects the development of such a course module in German pre-service chemistry teacher education. Developing the module was inspired by empirical investigations of the knowledge base of student teachers and practicing teachers in Germany (Burmeister & Eilks, 2013; Burmeister, Schmidt-Jacob, & Eilks, 2013). The development was done with the use of the model of Participatory Action Research (PAR) in science education (Eilks & Ralle, 2002). The paper reflects experience gained during the three years of development, including feedback collected from student evaluation sheets.

Education for Sustainable Development and chemistry education

In several instances in the past, industrial chemistry practices did not reflect current ideas of sustainable development as defined by the Agenda 21 (UNCED, 1992). This led to industrial accidents, contributed to environmental pollution, and established production environments that did not always acknowledge sufficiently-modern social standards. However, a change in attitude has taken place in the chemistry field in recent decades, at least in Western societies. Today, industry is seeking cleaner chemical production pathways that decrease ecological pollution, lower raw material demands, and increase overall social harmony within societies (ECCC, 1993). Among the different available concepts, the central ideas of change are laid down in the basic philosophy of Green or Sustainable Chemistry (Anastas & Warner, 1998; Centi & Perathoner,

2009). This goes hand-in-hand with a growing public awareness of both the finite nature of natural resources and the existence of limits regulating and determining feasible rates of growth (Meadows, Randers, & Meadows, 1972; UNCED, 1992).

Ensuring sustainable development in an industrialised society means maintaining the overall supply levels of energy and goods, while simultaneously decreasing both the amounts of environmentally hazardous substances and overall raw material consumption (UNCED, 1992). Such development is impossible without advances in chemistry research and chemical technology (Bradley, 2005). However, sustainable chemistry has not yet been implemented throughout the world. Production methods in many countries do not even come close to being ecologically, economically, or societally sustainable. Even in societies with strong sustainability movements, the positive aspects and benefits of current chemical developments are often repressed in favour of quite often poorly-informed, biased mass media coverage. Balanced news coverage and evidence-based communication remain widely underdeveloped in many countries (Hartings & Fahy, 2011). This means that chemistry education must help contribute to the development of a more balanced, better-reflected view among students, since they are future citizens, and are currently not receiving balanced media coverage of events. Chemistry education needs to promote both the knowledge and the skills necessary to allow students a place in society. This includes informed participation in societal debates as well as decision-making in cases in which society is making choices about science- and technology-related issues (Burmeister et al., 2012).

Such a balanced and critical view of chemistry requires a rethinking of chemistry education itself. Therefore, Burmeister et al. (2012) emphasised that reflections on the potential connections between chemistry and ESD should not only take subject content into account. They point out that rote memorisation of the subject matter underlying chemical and industrial applications will provide an insufficient basis for participating in real societal debates on modern chemistry and technology developments. One suggestion was to take modern educational concepts of school chemistry further into account when justifying ESD in chemistry education. Teaching objectives should reach far beyond any rote learning of chemical theories and facts in modern chemistry curricula, as discussed e.g. by Eilks, Rauch, Ralle and Hofstein (2013). Modern curricula and pedagogies of teaching should focus on the promotion of general educational skills. Learning how to participate in societal debates and to evaluate communication and available choices need to become overt topics in chemistry education (Eilks, Nielsen, & Hofstein, accepted for publication). A

more thorough focus on the societal-oriented, multi-dimensional character of chemistry education, as suggested by Hofstein, Eilks and Bybee (2011), offers a strong justification for combining chemistry education and ESD, including pedagogies that allow for learning how to participate in society (e.g. Eilks et al., 2013).

As a result, the central role of the chemical industry and technology in developing a society allots the central responsibility for contributing to ESD to the area of chemistry education. Furthermore, learning about how chemical developments themselves are interwoven with ecological, economic and societal impacts, including the decisions resulting from such issues, is of central importance. Recent societal developments can be linked directly to chemistry and technology, then be dealt with using a multidimensional, socio-scientific approach (Sadler, 2011). Using controversial socio-scientific issues, which are selected carefully with respect to chemical, industrial and technological questions, allows students the chance to experience first-hand exactly how societal questions related to science or technology are handled (Eilks et al., 2013). This approach has the potential to give the extra little impetus that is necessary to connect chemistry education and ESD. It can lead to the end goal of preparing the younger generation to contribute to the sustainable development of both the planet and the particular society in which they live (Ware, 2001).

It seems clear that chemistry education must contribute to ESD in a prominent manner. Unfortunately, this has not been the case in many science curricula in the past (Burmeister et al., 2012). Therefore, reform is desperately needed (Ware, 2001). If we take the most influential shareholders in effective innovations of teaching practice, i.e. the teachers (Anderson & Helms, 2001) into account, reform might begin with innovations in teacher training. It is clear from educational research that taking teachers' beliefs, foreknowledge and attitudes into account in the reform process is a necessary and serious precondition for any effective reform (Haney, Czerniak, & Lumpe, 1996). Reorienting teacher education to foster ESD is also a widely-acknowledged political goal (UNESCO, 2005b). This is why the current paper deals with developing a course module for pre-service chemistry teacher training on modern concepts of sustainability and ESD. The development is based on Participatory Action Research (Eilks & Ralle, 2002) and is undergirded by empirical research about student teachers' and experienced teachers' viewpoints and prior knowledge (Burmeister & Eilks, 2013; Burmeister et al., 2013).

Participatory Action Research for curriculum innovation in teacher education

For almost a decade, the Participatory Action Research model (PAR) developed by Eilks and Ralle (2002) has been used in many projects for chemistry education curriculum development and classroom research (e.g. Eilks & Markic, 2011; Eilks, Markic, & Witteck, 2010). This model was originally inspired by a research approach borrowed from economics (Whyte, Greenwood, & Lazes, 1989). It seeks to thoroughly connect domain-specific educational research, curriculum development and teaching practices. The basis for this model is the systematic use of empirical research evidence, which is connected to transformative actions in classroom teaching. The process of developing practices is performed in collaborative groups of in-service teachers and accompanying researchers. For innovations in school practice, teams of science educators from a university and teachers in schools are formed. They conduct the entire research and development process in a partnership setting (Eilks, accepted for publication).

The project described here represents one of the first approaches that transfers the PAR model outlined for school education reform to innovation for higher education. Not all assumptions of the model are valid regarding such a transfer, but the basic idea remains the same. Just as in school education, PAR for higher education seeks a cyclical optimisation of teaching practices, which are supported by research evidence. Equally valued information resources are combined at the beginning of the process. These include research evidence about teaching and learning processes in the specific domain, classroom curricula, reports of practitioners' personal experience, and the intuition and creativity of experienced people in the field (Figure 1; Eilks & Ralle, 2002). This combination of resources takes into consideration both empirically validated research results and formally developed school curricula. It also adds the factor of experience-based teacher knowledge and student perspectives gained during learning. These two areas comprise both ends of the spectrum of teaching- and learning-based knowledge; each is valuable and has its own strengths (McIntyre, 2005). Because the same information resources are available, applying the PAR model to innovations for higher learning can be viewed as contributing to the same field of results. Therefore, the objectives targeted in the process encompass newly-developed curricula, teaching strategies and empirical evidence about teaching and learning in the field. They also include the reduction of any deficits reported in documented practice, which results in better-trained professionals (Eilks & Ralle, 2002).

Action Research is generally described in the literature as being either the autonomous activity of the practitioner or, conversely, a cooperative process involving practitioners and external individuals (Mamlok-Naaman & Eilks, 2012). The PAR model in science education as described by Eilks and Ralle (2002) is one of the later cases (Eilks, accepted for publication). This leads to one of the significant differences when transferring the PAR model to the field of higher education. In the case of school chemistry innovation, projects are driven by cooperation between in-service teachers and external science educators from the university. In this particular case, however, both groups – teaching practitioners and science educators – fall into the same category. However, we kept the team structure in all cases in which PAR was transferred to higher education innovations. Different practitioners are involved in the developmental research process, even though not all of them perform teaching functions in their respective classroom exercises. This approach maintains the opportunity to gather external viewpoints regarding practice, which is where innovation is actually thought to take place.

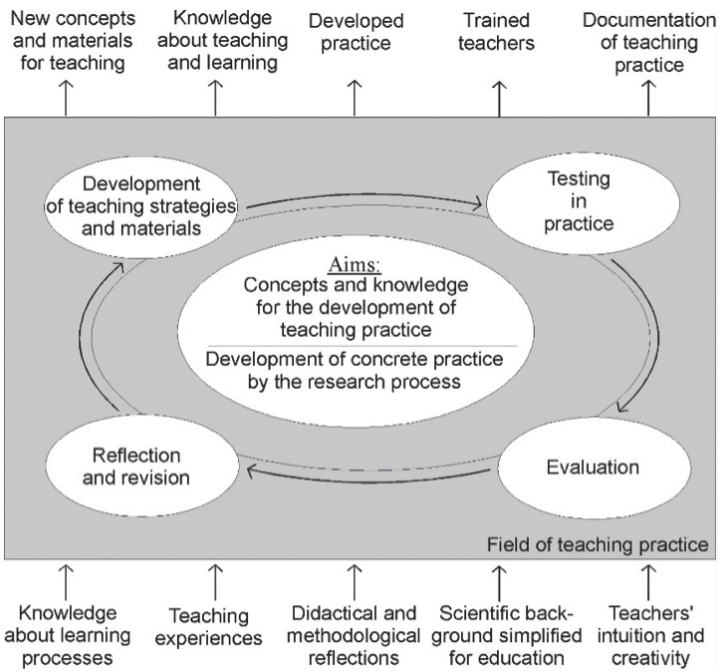

Figure 1: Participatory Action Research within domain-specific education (Eilks & Ralle, 2002)

The research process in the original PAR model is thought to be initiated when deficits in either teaching practices or empirical research are reported. PAR is then used to determine methods for eliminating or reducing any problems in teaching practice. This is also the case when transferring PAR to the realm of higher education. Research begins with a thorough analysis of the relevant literature. Group discussions within the research team are used to determine whether or not the problem is of general interest beyond the individual classroom. The discussions are also used to reflect upon whether or not evidence and ideas documented in the literature are feasible for offering help in the specific educational setting experienced by the practitioners.

All types of Action Research are cyclical in nature. This is one of the main differences between it and more conventional research designs (Eilks, accepted for publication). This is also the case in the approach chosen within this project. At the start, new teaching approaches are designed, then applied and tested. The objective is to cyclically improve teaching practices by applying newly-developed units in different testing groups. The prototype designs are used and tested as early as possible to see if they have the potential to solve specific problems in teaching practice. The process of planning in a group, or at least in a partnership of one practitioner and one accompanying researcher, is an crucial factor. This is not just because problems in evaluation/reflection can be avoided, but also because communication and reflection between the different practitioners/researchers ensure that each design is compatible with the needs of everyday teaching practices.

One central objective of any Action Research project is to improve practice step-by-step within each cycle of development. In order to do so, each of the cycles must be analysed and evaluated. However, the curricula are developed using close cycles of development and testing. It has been suggested, e.g. by Bodner, MacIsaac, and Whyte (1999), that classical strategies applying a quantitative understanding of evaluation are inappropriate for this kind of curriculum development. This is because there are far too many influencing factors, and the process includes the personal involvement of the researchers and practitioners. A qualitative and interpretative paradigm is more suitable in this situation. In this case, the validity of the interpretations can be tested communicatively during the discussions between accompanying persons and the teaching practitioners, and within the teaching practitioner group. The criteria as defined by Altheide and Johnson (1994) can be used as a guideline: plausibility, credibility, relevance and importance. If evaluation indicates that the curriculum changes are successful in reducing teaching and learning deficits, the development and research process can be continued in a new phase that will potentially lead to even more improvements. The newly-developed

research phase must attempt to determine the reasons behind existing deficits, including the impact of any changes made during the previous round of research. The intention is to obtain general, yet relevant background information.

In the case study described here, the problem analysis yielded many official documents (as discussed in Burmeister et al., 2012) that called for a more thorough implementation of course content on ESD in German pre-service teacher training programs. The literature analysis supports claims that the implementation of subject matter addressing both sustainability theories and learning about ESD in chemistry teacher preparation is insufficiently developed in many countries (e.g. Summers & Childs, 2007). This is why the cyclical PAR process was started in the present study and eventually led to three developmental cycles in three consecutive years of testing. Hard empirical evidence and precise information about student teachers' a priori knowledge, attitudes and beliefs in the case of German chemistry education were difficult to obtain at the beginning of the process. To overcome the lack in empirical support, several research initiatives were started in parallel to the curriculum development. They were meant to interact with and influence both curriculum development and the participants' understanding of its effects. One initiative included mapping out the knowledge base and attitudes of German student teachers and teacher trainees in the fields of sustainability and ESD, and where they are connected to chemistry education (Burmeister & Eilks, 2013).

German chemistry student teachers and trainee teachers' knowledge on sustainability and ESD

Research on teachers' overall knowledge base, attitudes and beliefs concerning sustainability concepts and ESD is rare in the literature. Based on the few available studies from Germany and other countries (Seybold & Rieß, 2006; Rieß & Mischo, 2008; Summers & Childs, 2007; Spiropoulou, Antonakaki, Kontaxaki, & Bouras, 2007; Zachariou & Kadij-Beltran, 2009) and in related fields, one can assume that German (student) teachers' knowledge of sustainability issues and the theories behind sustainable development might remain underdeveloped. This has already been shown by other studies on teachers' knowledge about the related field of climate change (Khalid, 2003; Papdimitriou, 2004) and their attitudes and pedagogical content knowledge (PCK) towards teaching respective issues (Feierabend, Jokmin, & Eilks, 2011). The same might be true for the pedagogies developed for ESD-driven chemistry teaching. Nevertheless, for the case of chemistry education in the German context such documentation is quite difficult to find.

The development of the course module was accompanied by various research studies in order to set the curriculum development process for innovating German teacher education on a broader pedestal. These studies were thought to describe pre-service teachers' knowledge base and attitudes towards sustainability, and the didactics and pedagogies of ESD in chemistry education. In one of the studies discussed in Burmeister and Eilks (2013), the level of understanding and knowledge student teachers (N=91) possessed at the beginning of their pre-service university training was mapped out based on questionnaires. The poll asked participants questions about contemporary and theory-based understandings of sustainable development and ESD. A second sample from Germany's compulsory, post-university teacher trainee program (N=97) was also acquired using the same tool. In both cases, the study researched candidates' knowledge, attitudes and ideas for potential action areas concerning sustainability issues and ESD in chemistry education.

Burmeister and Eilks (2013) described no major differences between both groups. They found positive attitudes among both student teachers and teacher trainees with regard to strengthening the link between sustainability issues and ESD in secondary school education. The participants acknowledged that all school subjects should contribute to ESD, but they also acknowledged a specific responsibility for chemistry education. Despite this positive attitude, their overall knowledge about potential topics and pedagogies in this area was limited and poorly thought out. There seems to be a lack of theoretically sound ideas about modern concepts of sustainability or a theory of ESD in the case of these trainees. However, the study also documented mostly positive attitudes among the candidates. Many student teachers and teacher trainees were headed in the right direction when asked for their knowledge about and association with sustainability and ESD. However, their ideas were raw, undeveloped and unsupported by substantial knowledge or theory. There were also many participants who were unable to mention any solid ideas or starting points for such a topic. Only an extremely small minority of the people questioned was able to outline a more-or-less complete description of what is meant by sustainable development. Almost no one had heard or could repeat what a theoretically-based description of ESD actually entails.

Overall, most future chemistry teachers in the two samples acknowledged that secondary school education should promote ESD, and that chemistry education should be a part of it. Some were able to associate topics from the chemistry curriculum with issues of sustainable development, e.g. with the question of the sustainable production of fuels. Yet ideas for using ESD in chemistry education, including how teaching might be structured by adequate

pedagogies, remained extremely limited. Both samples explicitly mentioned that the participants had not yet been confronted with learning about sustainability or ESD pedagogies during their teacher training program. Both issues seem to play hardly any role in German teacher training programs. Neither chemistry courses, nor educational and domain-specific educational courses seem to address these issues explicitly so far. The participants mentioned that the major sources of their knowledge had been the informal media or from informational settings such as TV and the Internet. This strongly supports the premise of the current study that the development of explicit course content and modules to strengthen pre-service teachers' theoretical and practical knowledge for applying ESD are desperately needed in the field of chemistry education. Such statements offer starting points for connecting new knowledge to prior intuitive ideas. They also provide new topics and contexts, from which learning how to include ESD in chemistry education may begin, e.g. the questions of renewable energy sources or climate change. It also became clear that a theoretical foundation needs to start from the very bottom. It needs to include both learning about sustainability as such, the role of sustainable thinking in chemistry, and knowledge about practical pedagogies for effectively bringing ESD into the chemistry classroom.

Structure of the course module

The structure of the course developed in this project encompasses different topics. The course module has a duration of six weeks with one ninety-minute session per week. Table 1 gives an overview of the different sessions. The pedagogical ideas implemented in the learning process within the course module are presented in brief.

Table 1. Overview of the course module structure

Session 1	• Assessing *a priori* knowledge and attitudes towards sustainability and ESD using a research questionnaire • Lecture on the historical genesis and modern concepts of sustainability • Overview on the course and introduction to a WebQuest for the issues of sustainability and Green Chemistry
Session 2	• WebQuest on issues of sustainability, the concept of Green Chemistry and its perception in society • Role playing of different views towards Green Chemistry, inspired by the WebQuest
Session 3	• Jigsaw classroom on educational policy papers about ESD in German school education

Session 4	• Analysing a lesson plan on teaching about plastics with an ESD focus, which mimics the product testing method in order to evaluate plastics in the foreground of sustainability criteria
Session 5	• Facultative: Further analysis and discussion of teaching materials • Facultative: A board game on Green Chemistry in the chemical industry
Session 6	• Lecture presentation summing up the course content • Lecture presentation about basic models how to connect ESD and chemistry education • Self-assessment of learning success with reference to the initial questionnaire and data about student teachers' knowledge on sustainability and ESD from the accompanying research • Reflection of the course content and structure

Inspired by the empirical study mentioned above (Burmeister & Eilks, 2013), the coursework starts with a self-reflection activity (Table 1). This activity makes the participants explicitly aware of their *a priori* knowledge, their intuitive understanding of the topic, and their lack of theoretical foundation. This activity addresses findings from the research study, which show that many participants may have valuable ideas, but are perhaps unaware that such rough ideas do not form a sufficiently comprehensive basis for a theoretically embedded foundation. This activity is performed by asking the participants to fill out a questionnaire similar to the one used in the accompanying empirical study. This parallel approach allows researchers to reflect upon and compare participants' thoughts in a larger sample.

Beginning with the exposure of potential deficits in the participants' knowledge, the course then focuses on three key areas of learning (Table 1):

- The historical development and modern concepts of sustainability in general and their operationalisation in chemistry, especially through the concept of Green Chemistry;
- Learning about the basic theories and government legislation concerning ESD with particular focus on the practices of German chemistry education; and
- Learning about adequate pedagogies for acquainting school students with sustainability thinking in chemistry classes, promoting their understanding skills, and increasing their participation abilities in societal debates on questions of science and technology.

Contention with the basic theories behind sustainability is introduced through a short lecture, which presents the historical development of the term, the genesis of the Agenda 21, and an overview of competing concepts for modelling sustainability. The central focus in this phase is understanding 1) that in modern concepts of sustainability different dimension are interwoven and contain at least the ecological, economical, and social dimensions, and 2) that

sustainability always is connected to balancing the interests and needs of today's society with the interests and chances of future generations. Learning about the importance of sustainability issues within chemistry and the chemical industry is structured using a WebQuest (a structured internet inquiry) designed for this course module (Burmeister, Jokmin, & Eilks, 2011). The WebQuest introduces problems and issues arising from chemistry and the chemical industry connected to sustainable development. It explains chemical industries' efforts to contribute to sustainable development, but also presents critical voices. Learning via the WebQuest prepares the participants for a role-playing exercise, in which both the effort required and the chances represented are talked about by different role-players. This includes discussing critical roles that question whether the efforts undertaken are carried out in the correct fashion and are sufficiently intense in nature.

Contention with ESD theories takes place in a jigsaw classroom, based on different position papers taken from governmental bodies and educational societies. This cooperative learning scenario is used for analysing and comparing position papers from the Conference of the German State Ministries of Education (KMK), the German Society for Educational Sciences (DGfE), as well as the German hub of the UN world decade of Education for Sustainable Development (Transfer 21) (DGfE, 2004; KMK, 2007; Transfer 21, without year). This phase makes clear the importance that educational theory and educational policy give to ESD. It also shows that all school subjects, among them chemistry, are responsible for contributing to the knowledge of pupils about ESD.

The next learning phase for how to deal with ESD in school chemistry classrooms is based on a lesson plan developed by a group of teachers especially for this purpose (Burmeister & Eilks, 2012). The development of this lesson plan also followed the PAR design but had innovations in the secondary chemistry classroom as its main goal. The lesson plan deals with the topic of plastics and handles the basic chemistry and properties of different polymer materials. The lesson plan focuses on ESD by combining the learning of essential chemistry content with information on how to evaluate chemistry products and technologies in the foreground of sustainability criteria. Within the lesson, the students learn essential chemistry theory, but they are also familiarised with the three dimensions of modern sustainability concepts. The pupils are asked to mimic consumer test agency workers in order to experience the interconnectedness of the three sustainability dimensions when evaluating chemistry products and technologies. Within the consumer test agency method, participants are asked to evaluate different sorts of plastics currently addressed by the sustainability debate, all of which have ecological, economic and societal implications. The

pupils have to weigh the various dimensions against one another, evaluate the different plastics, and make a final evaluation. They learn about the different dimensions, including the fact that various aspects often negate one another when combined in a comprehensive evaluation. This activity is also mimicked by the student teachers during their coursework, then reflected upon with regard to its potential for influencing pupils' learning in a classroom setting. An optional board game dealing with Green Chemistry principles in industrial chemistry (Coffey, 2011) may be added if time allows.

The course closes with a session reflecting on the learned content and the present status of ESD implementation in German chemistry education. For this purpose, the four basic models for implementing ESD in chemistry education as described by Burmeister et al. (2012) are presented. This phase also refers back to the participant questionnaires, which were filled out at the beginning of the course. It also includes the research results described in Burmeister and Eilks (2013) and related findings from international studies on (student) teachers' understandings and views concerning sustainability issues and ESD in chemistry education.

Feedback from the participants

The course was applied in three cycles of development during three consecutive years of study. A total of 46 student teachers participated in the course. The different rounds of testing faced slight variations and improvements in the teaching materials. The first round was reflected on through group discussion occurring after the course (N=18). The second and third testing rounds were evaluated using a written questionnaire with open-ended questions and 32 Likert-items (N=28). The second and third rounds also conducted group discussions between the course teacher and the participants at the end of each of the testing rounds. All data from the evaluation were qualitatively analysed. The analysis was used for cyclical optimisation of the course, including insights into its feasibility and effects.

Overall, the participants responded very positively to the course. The student teachers stated that the course module was interesting, important and valuable for their later profession as chemistry teachers in a school. The student teachers also emphasised that they had learned a great deal and that they now felt more competent in the area of sustainability and ESD. A few example quotes from the open questionnaire can illustrate these claims:

> »I consider it logical to offer such a seminar. Even if the term 'sustainable development' has been heard by the participants before, it was never rationally explained. Since this seminar, I now consider myself capable

of explaining what 'sustainable development' is to another person.«

»The seminar was very productive, and for most of the participants it was a new topic. Presumably, some had heard about ESD, but not in sufficient detail.«

»We now have a basic and solid insight into sustainable development, which can be acted upon by the students using the presented pedagogies.«

»I personally consider the ESD lesson plan to be structured in a very interesting and diversified manner. I consider the lesson plan to be positive, as were the presented possibilities for implementing it in the coursework of chemistry teaching in school. Sensitisation for the topic was very successful. The diversity in methods resulted in variety and fun. I found it interesting to actively slip into the role of my pupils and to mimic the lesson plan.«

»The seminar was planned in an interesting and diversified way – I liked this very much. Moreover, I have the feeling that I learned something that will be helpful to me in the future when I am a teacher.«

The impressions from the open statements in the questionnaires and the group discussion were supported by the responses to the Likert items. Figure 2 gives an overview of selected items and the students' responses.

Criticism was rare and occurred only briefly in the questionnaires and the group discussions. In the first round of testing, individual students were concerned about non-optimal time management of the course and insufficiently recognisable learning objectives for each phase of learning. Some student teachers did not fully recognise the differences in some of the course materials, since some were structured as materials for teacher training while others were materials developed to be used in a secondary school classroom. The different kinds of materials, the roles they were expected to play, and the hoped-for learning outcomes were made more explicit in the second round of testing. Some criticism also arose initially, because certain phases dwelt overly long on political and societal aspects, rather than on chemistry and science factors. This was especially prevalent in the WebQuest and role-playing phases of the course. The emphasis was then changed by selecting different Web materials for the WebQuest according to the criticism mentioned by the participants. Due to improvements in the course structure and materials, criticism in both of these areas diminished in the third round of testing.

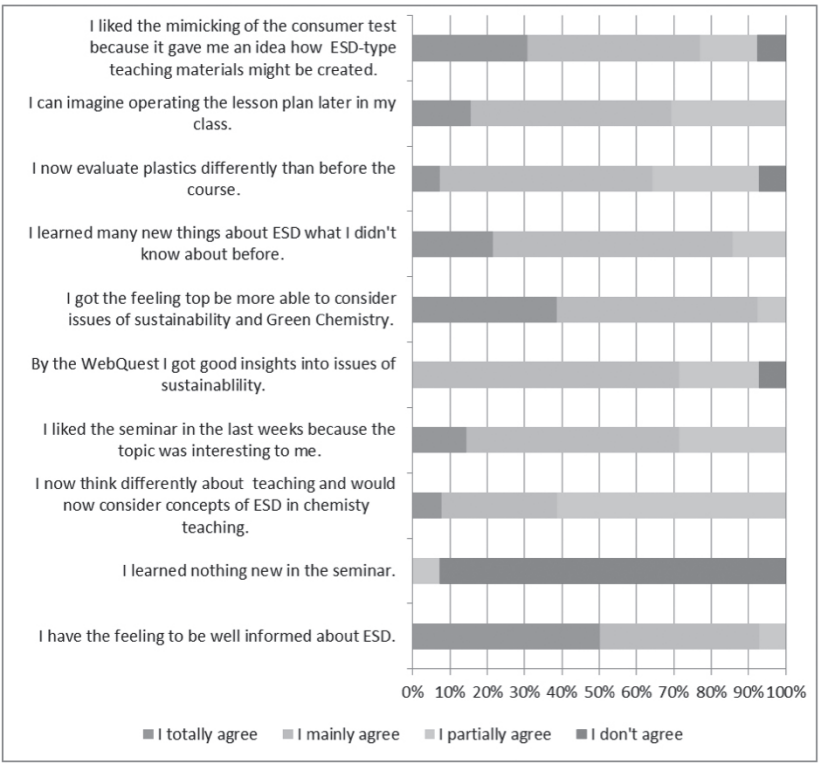

Figure 2. Selected Likert-items from the feedback questionnaire (N=28)

Conclusions and implications

The end of the UN World Decade for Education for Sustainable Development, announced for 2005 to 2014 (UNESCO, 2005a), is drawing near. The focus of this decade was to thoroughly implement ESD in all fields of education, among them secondary school education in general and chemistry education in particular. The study discussed in Burmeister and Eilks (2013) documented that German student teachers and teacher trainees in chemistry have positive attitudes towards implementing ESD into their future teaching. However, the study also documented that their theoretically-based knowledge before teacher training and their acquired knowledge and skills during teacher training has thus far remained insufficient.

The case study described here offers an alternative to this. The current course module shows that it is possible to implement learning about sustainability issues and ESD into pre-service chemistry teacher training. The contents of the module proved valuable for offering future teachers ideas and pedagogies

for familiarising themselves with sustainability issues. This included the connection of ESD with chemistry topics and modern pedagogies for implementing ESD in chemistry teaching. Student teacher feedback regarding this innovation was quite positive. The statements made by the participants seem to indicate that future teachers can and will be more sensitive and competent when dealing with sustainability issues and ESD in the chemistry classroom if they are allowed the opportunity to do so.

Reflection upon our experiences and findings tends to lead us assume that ESD practices will eventually be implemented in German chemistry teaching if the prospective teachers are allowed to learn about respective pedagogies. We can, however, assume that the current implementation rate is still low, because learning about ESD in connection to chemistry teaching is not yet a focus of chemistry teacher training in Germany. Unfortunately, hard evidence on the current state of concepts believed in and/or practiced by teachers in German chemistry classrooms is not yet available. Research in this field is still needed; one such study is under way. However, the fact that almost none of the student teachers brought any developed concept of sustainability in connection to chemistry topics from the school to the university is sobering. This would seem to indicate that such issues are not prominent topics in current chemistry classrooms in German secondary schools. This also means that pre-service chemistry teacher training programs must also be supported by training in the area of in-service chemistry teacher training with respect to sustainability and ESD. Single parts of the course module described above are currently being used for this purpose, e.g. in-service chemistry teacher training workshops about the WebQuest on Green Chemistry and the lesson plan on evaluating plastics. Perhaps these can contribute further to reducing deficits in in-service teachers' general knowledge about sustainability concepts and ESD in the same fashion as they did for pre-service teachers in this case study.

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Visual Art Education: Between Spatial Sustainable Development and the Image of Architecture

Beatriz Gabriela Tomšič Čerkez[1]

If we consider the role of education and its implications in the formation of a critical and conscious user of architecture, it is obvious that the development of educational strategies related to the sustainable development of our common space and environment becomes fundamental. Among the objectives of art education, we should consider our commitment with authentic and actual problems in our societies. One of them is the awareness of the characteristics of the built environment. Our cities are, in fact, the results of time-space plasters that function as units of spatial experiences in everyday life. The oldest buildings are iconic points of reference, and their simple presence produces a collection of unique meanings to the collective memory of a culture. Their demolition would in many cases injure the cities' images and memory. The main question is how to develop programs at all educational levels to promote critical and responsible attitudes towards the common environment covering all the aspects that shape the concepts of sustainable spatial development. However, it is not possible to create strategies without proper information about the views of the students. The collection and analysis of this views is the main theme of the paper. It is supported by an empirical research on the image of architecture and the environment, held among secondary school students. The research is based on the idea that one of the most efficient critical attitudes towards the world would be to develop an unconditional connection of art work with »everyday life conditions« to promote the education of critical and responsible »perceivers« of the environment.

Keywords: Architecture, Spatial perception, Sustainable development, The role of art education, Educational strategies

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Likovna vzgoja: med prostorskim trajnostnim razvojem in podobo arhitekture

Beatriz Gabriela Tomšič Čerkez

Razvijanje vzgojno-izobraževalnih strategij, povezanih s trajnostnim razvojem, na področju prostora in okolja je pomembno, ko je oblikovanje kritičnega in zavednega uporabnika arhitekture ena izmed nalog vzgojno-izobraževalnega procesa. Eden izmed ciljev likovne vzgoje mora biti tudi prepoznavanje aktualnih in avtentičnih problemov naše družbe. Med njimi je tudi ozaveščenost o značilnostih naše grajene okolice. Dejansko so naša mesta rezultat časovno-prostorskih nanosov, ki funkcionirajo kot enote vsakodnevne izkušnje okolja. Najstarejše stavbe so znamenite, pomembne točke, ki soustvarjajo edinstveno podobo kolektivnega spomina posamezne kulture. Njihova rušitev bi v veliko primerih prizadela podobo in kulturo mesta. Osrednje vprašanje je, kako razviti programe na vseh stopnjah izobraževanja, s katerimi bi promovirali kritično in odgovorno ravnanje do okolja ter zajeli vse vidike, ki oblikujejo koncept trajnostnega okoljskega razvoja. Vsekakor pa teh strategij ne moremo oblikovati, če nimamo primernih informacij o mnenjih študentov. V prispevku so ta mnenja zbrana in predstavljena. Raziskava o arhitekturnih in okoljskih predstavah je bila izvedena med srednješolskimi dijaki. Ideja raziskave je, da bi bila ena najučinkovitejših kritičnih drž v razmerju do sveta, da razvijemo brezpogojno povezavo umetniškega dela z vsakodnevnimi življenjskimi pogoji, s čimer bi spodbudili vzgojo in izobraževanje kritičnih in odgovornih »uporabnikov« okolja.

Ključne besede: arhitektura, zaznavanje okolja, trajnostni razvoj, vloga likovne vzgoje, vzgojno-izobraževalne strategije

Introduction

Equilibrium understood as a balanced state of »being« is a fundamental conceptual support when dialectical pairs such as »global/local«, »own/foreign« or »tradition/innovation« are involved in the discourse and practice of architecture. It is intriguing that these processes do not affect other fields of art, at least not in the same way they do in the case of architecture, demonstrating the potentialities and the power architecture has in the ideological, financial, social, cultural, historical, etc. aspects of life. The mechanisms of constructing such dialectical pairs of concepts follow different paths: they reflect a background of historical processes, cultural links and concrete practice, and evaluation of architecture.

If we consider the role of education and its implications in the formation of a critical and conscious user of architecture, it is obvious that the development of educational strategies related to our common space and environment become fundamental. On one side, we need to know how students perceive space, how they make conscious the values of space; on the other, the comprehension of the concept of sustainable development is essential. Sustainable development in this case should be understood as a pattern of resource use that aims to meet human needs while preserving the built and natural environment in a state of equilibrium so that these needs can be met not only in the present, but also by future generations. Therefore, it is worth asking a question: how were the problems of harmony and spatial order, which have a fundamental meaning for description of many phenomena and processes of spatial character, understood in the past and how they are perceived today, in the light of current documents, projects and realisations? Furthermore, how can proper programs at all educational levels promote critical and responsible attitudes towards the common environment, covering all the aspects that should shape the concepts of sustainable spatial and environmental development, enhancing at the same time great freedom regarding the formal aspects of architecture be developed?

However, it is also necessary to consider the consequences of the phenomenon of universalisation and the effects of an »en masse basic consumer culture«, as Ricoeur (1961) calls it, with its disturbing effects spreading a similar »fast architecture« throughout different countries in the world. From the point of view of identity, this could be nevertheless in some cases understood as a sign of the insertion in the »developed world« of consumption of architecture with a new definition of the roles of the architect and the client or user.

To be able to elaborate significant pedagogic strategies that would promote awareness about the spatial environment, it is necessary to gather

meaningful information regarding the fundamental questions of how students elaborate their representations of space values, and what influences their perceptions and interests and desires.

Trying to obtain this kind of information, we carried out empirical research on the image of architecture and its links to the identification with the environment, held among secondary school students. These opinions are of immense value at the moment of generating educational strategies within sustainable development. The research based on the idea that one of the most efficient critical attitudes towards the world would be to develop an unconditional connection of the art (architectural) work with »everyday life conditions«, arguing that the possibility to undertake the risk of an eventual incompatibility of beliefs regarding our common living space would be grounded on the education of critical »perceivers« of the environment as a whole, i.e. »perceivers« that could deal with eventual dissonances in a constructive and responsible way.

To obtain a general idea of the field we are interested in, we will present a brief view of the context of the discussion: starting with architecture, perception and environmental information, followed by some considerations on sustainable development and architecture; ending with sustainable development and art education.

The context of the discussion: architecture, perception and environmental information

The definition of architectural space has been throughout history, from the Renaissance onwards, increasingly linked to the product of subjective projection and introjections and hence opposing the idea of space as a constant »container« for things and bodies.

Today, the world of architecture offers a wide range of new experiences: deep shades, due to different occupations of space, the loss of the idea of the classical facade and the clarity and »readability« of the principles on which the building was designed replaced by reflecting materials, i.e. »mirror materials« that transform the conditions of interior and exterior architectural space with reference to the human body. Space without barriers and almost no »foreseeability« is slowly replacing the traditional architectural space, centred on the human body.

From a semiotic point of view, we should unfold the narrative program of a specific place as well as the phenomenological elements in order to elucidate how content and form would combine in the creation of a precise spatial experience.

»Urban space analysis« is consistent with what Gibson (1986) called »scanning«, or the broad »collection of ambient information« (the picking up of ambient information). Individuals explore the sequence changes in the organisation of space to obtain knowledge of the »map« of their environment. Interesting parts of the structure of the environment attract individuals' view, particularly the movements and displacements, differences, and certain details containing more information and attracting our first sight, according to Gibson.

Places and objects define space and give space »personality«. Space becomes a place when it has a precise definition and meaning (Tuan, 2003; Hiss, 1991). Things especially become essential according to the dictates of culture. Verbal language may also differ in the ability to articulate the levels of experience; therefore, according to Tuan (2003), art and rituals take on the task that verbal language cannot. Art works show material images that resulted from emotional images, making contemplation and thinking available. There is an intriguing paradox: mind creates distance and simultaneously destroys the immediacy of experience. Reflection on our past returns selected particles, thereby gaining permanence.

Puig claimed that the psychological aspects of space perception are related to sociological aspects, because we always depart from the perception of the cultural characteristics of the environment; therefore, the forms that we perceive are the unique ones that a particular social context allows. Even the most basic postulates of Gestalt psychology are largely the result of »cultural situations«, not only the consequences of our perception capacity (1979). People construct a kind of dialectic between successive perceptions. Based on current perceptions and previous ones, Puig established the new dimensions of perception and attention. This process is influenced by an ideological basis, the social context, conscious and unconscious interests, space, time, and by numerous foreseeable and unforeseeable factors.

The architect creates the image of culture: the natural and human environment is present, which reflects the characteristics of functional rhythmic patterns, which define and constitute a culture. These patterns are a complex of personal and social life. Architects intuitively detect cultural rhythm and seek to find a symbolic form, creating a world that is »naturally« complementary of an individual: at a personal level, this their homes; at the social level, this is expressed by representative buildings and their surroundings, according to Tuan (2003).

Holl says that to »open« architecture to perception means to leave aside rational understanding being open to intuition, which leads us to the nature of space. Dynamic perspective series generate fluid space from the viewpoint

of the body moving and constantly changing its axis. The axial view is not included in a two-dimensional surface, but in three dimensions and is also manifested in the force of gravity, electromagnetic fields, time, etc. The phenomenon of »current perspective« is the basis of spatial experience (2006). Light, colour and materials open processes, which continually raise new relationships.

The work of the architect is therefore also in the formulation, »invention« of new relationships. Architecture can no longer be bound to composition or function, but to a long and broad list of variables that allow countless combinations (Tschumi, 2001).

In such a broad context, we can see the spirit of this study: major changes in attitudes, perception and evaluation of events in the world of architecture, which occur in parallel with substantial shifts in the school environment and the appearance of a new »viewer-user-generator« student; rapid functional changes in his or her life and our responsibility as managers of the reproductive system of the ideological apparatus that school remain a necessary part of our social order.

Sustainable development and architecture

From a hermeneutical point of view, we need to reflect on the issue of sustainable development in order to understand how to approach spatial design in general, and how to create a connection between an incomprehensible tradition and a culture that insists on the conservation of certain elements: in this case, the conservation of specific places or architectural objects worth proper qualification in specific cases (Tomšič Čerkez, 2012).

Preservation, restoration, and rehabilitation in architecture cause much less destruction to our natural resources than new construction. To appreciate this, architects must be sensitive to the energy used in the production and assembly of materials needed for new buildings, from their origin to their end of life and subsequent reuse.

Statistics reveal that building construction consumes 40 percent of the raw materials entering the global economy every year. Interestingly, about 85 percent of the total embodied energy in materials is used in their production and transportation. Even before they reach the construction site, building materials consume large quantities of fossil fuels.

If all the hidden costs were specified in the balance sheet, the recycling of architecture would be perceived as the only rational strategy for the management of material resources. Modern construction methods are incredibly wasteful of resources. Designers sensitive to sustainable practices can establish

a recycling program to reduce the amount of solid waste resulting from construction and choose materials that are either recyclable or reusable (Anderson, 2008). In contrast, adaptive reuse is much more labour-intensive than new construction, because it involves the reconditioning the existing structures to adapt to modern day requirements.

This dependence on human resources encourages the local community to participate and potentially revives a vernacular rhythm in architecture. This activity can remind us that vernacular architecture is one cornerstone of our identity. There is a certain familiarity about city space, a comfort to know that the building we have known all our life has not changed much. We could navigate from Point A to Point B looking at buildings, aware at any time and any place exactly where we were because the structures around us have not changed and we identify with them.

Sustainable Development and Art Education

Architecture within art education is a rather new field of research, as is sustainable development. Traditionally, sustainable development has been connected with the environment, ecology and economy, but it also entails a strong social and cultural dimension. Art and education are changing at the national, regional, and global levels, which poses a challenge for art educators to check and update their views and practices and to develop art education that supports social wellbeing, equality, prevention of alienation, cultural interaction, and diversity.

Sustainable development also presupposes an interdisciplinary, interartistic, and holistic approach. We can approach the theme from many perspectives and fields of science connecting them with art to shed light on the relation of art education to ecological and environmental sustainable development, socially sustainable development, culturally sustainable development and economically sustainable development.

Jokela (2005) stated that environmental sustainability means placemaking and participation, relation to nature and the environment is in a state of change because of urbanism and new livelihoods in rural areas, and because of a new awareness of ecological and environmental issues. At this point, some questions open: How can art education create new possibilities for participation in the development of nature environments, villages, suburban areas, and cities? What is the role of place-specific art, place-based strategies, and environmental design in art education? How big are the ecological footprints of the arts and art education? How can environmental awareness and responsibility be learnt in art education?

Social sustainability for this author means partnerships among communities. Building partnerships in education involves links between universities, schools, working life, and communities; between teachers and parents; between researchers and practitioners; and between the different levels and sectors of education. At this point, new questions open: How can we change professional cultures towards collaboration, collegiality, and commitment? Which strategies and practices may promote caring, participation, empowerment, democratic values, inclusion, and equality? What is the role of public knowledge, public art, and the Internet in art education?

Cultural sustainability is linked to questions of identities and cultural diversity. Enhancing and sustaining the sense of cultural and personal identity becomes emphasised in a world of globalisation, mobility, and multiculturalism. We can ask how a constructive dialogue between different cultural, professional, and social groups can be built. What is the role of traditional knowledge in art education within sustainability? How can new technologies be used in developing cultural sustainability? What contexts, relationships, and practices enable students, teachers, and researchers to develop their personal and collective identities and to strengthen their self-esteem in this world of rapid changes? How are professional identities shaped by dialogue and tensions between personal, professional, and contextual knowledge in this field (www.ulapland.fi/Insea2010)?

Economic sustainability has to do with creative capital. Art educators know that art education is valuable, but it remains unclear how the value is measured and described in society, what the methods of measuring the implementation and reporting of the results of sustainability in art and art education are, and how art education is connected to local livelihoods. It is also fundamental to analyse how education promotes cultural, social, and environmental capital, and how creativity can be understood as a resource for sustainable development and innovations (Jokela, 2007).

These are some of the questions that open when we consider sustainable development from a wide perspective in the field of art education. Their answers, of course, exceed the objectives of this paper.

In everyday school praxis, sustainable art education is considered from two main points of view. One is the art motif, which is that which is represented in the art work, and the other is the artistic technique, with which either the use of recycled materials or the re-use of materials is supported. Of course, these two aspects are not sufficient to encompass the complexity of the issue.

Research problem

To be able to elaborate significant pedagogic strategies that would promote awareness of the spatial environment, it is necessary to gather meaningful information. How students elaborate their representations of spatial values, and what influences their perceptions, interests and desires are fundamental questions.

In an attempt to obtain this kind of information, we carried out empirical research on the image of architecture and its links to the definition of identification with architectural space. It was held among first year secondary school students. This »pedagogic moment« is extremely important in the presented context, considering the role of education and its implications in the formation of a critical and conscious »user« of architecture and architectonic space.

Method

The research was specifically planned for the field of architecture within the subject Visual Art Education, where students develop their own projects in the different fields of visual arts and spatial design.

A total of 189 15–16-year-old Slovenian high school students from schools in Ljubljana participated.

The testing instruments included a test of initial achievements in the field of spatial design, a test of artistic creativity and a concrete task from architecture: the resolution of a project entitled »The Home of Your Dreams« in which students should be able to show improvements regarding their relation to spatial problems. The general strategy to guide the pedagogic process was based on experiential learning. Because the detailed presentation of the entire research exceeds the objective of this paper, I will present the results of three questions from the test of creativity.

Our aim regarding the answers to these three questions was to obtain an approximate vision of how students evaluate the image of an architectural object, what kinds of impressions they state, how they experience the environment in which they live, and on what basis they shape their vision of the world that is linked to the »image« of architecture.

Within the three cases, students were shown three pictures (10×13cm colour prints in their test form and projected on the blackboard at the same time).

Students had to respond to the following three propositions:

1. Take a look at the pictures of the three architectural objects below. The

pictures present the facades of three different buildings. Which one do you like most and why?

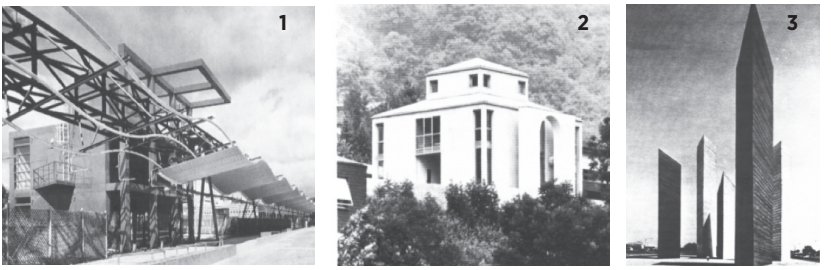


Figure 1: Pictures of different architectural objects used in the 1st question of the test. (Source of graphic material: Frampton, 1992, p. 313, 295 and 320.)

2. Take a look at the facades of the three architectural objects below. In your opinion, which one is suitable for our environment if you consider the materials they are built with, and why?

1. Metal sheets 2. Brick 3. Plaster

Figure 2: Pictures of different architectural objects used in the 2nd question of the test. (Source of graphic material: Frampton, 1992, p. 293, 200 and 306.)

It is necessary to state that the chosen images within the first two questions show images that were not familiar to the students and belonging to decidedly different contexts (Frampton, 1992). Engaging with them meant a process of analysis, abstraction and evaluation to be applied to the context in which they live.

In the case of the third question, the students were shown the three pictures printed on their test sheet and projected onto a screen. We made an introduction of the three places to guarantee that all the students could recognise them and remember their personal experiences in these places. It was necessary to check that all the participants knew the three proposed locations well. Our

question did not focus on the material characteristics of architecture that could be eventually appreciated on the photographs but on the »affective content« linked to the sense of belonging to a certain place.

3. You probably know these three places in Ljubljana: 1. »Kolisej«, 2. »Šumi« in front of Ljubljana's Drama theatre; both have been torn down, and 3. The terrain on the left side of Ljubljana's railway station that is practically abandoned. The three locations have been neglected for quite a long time. Do you miss any of the destroyed buildings? If you do, which and why?

Figure 3: Pictures of different places mentioned in the 3rd question of the test. (Source of graphic material: archive of the author).

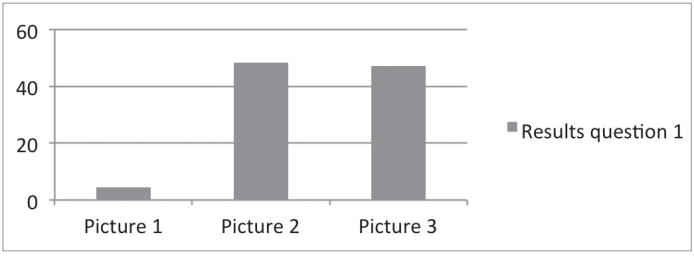
The answers to the three questions were analysed in two phases: first, we considered the number of answers, i.e. the number of points each picture achieved in percentages; second, we analysed the qualitative contents of the given information in students' explanations. We then attempted to elaborate a qualitative interpretation of the answers.

Results

The results were as follows in the case of the first question: Picture 1 was chosen by the 4.49 percent of the students, Picture 2 by the 48.31 percent and Picture 3 by the 47.20 percent.

Regarding the reasons for the election, students that chose Picture 1 stated »It looks exotic«, »It is not for our context«, one of the students wrote that »It could be built in a more developed country than ours«. Students that chose Picture 2 stated »It does not contrast with its surroundings«, »It is beautiful«, »It is a nice colour«, »Because of the shape of its windows and roof«, »It looks balanced«, »The natural surroundings of the building are exuberant and beautiful«, etc. Students that chose Picture 3 stated »It contrasts its surroundings«, »It

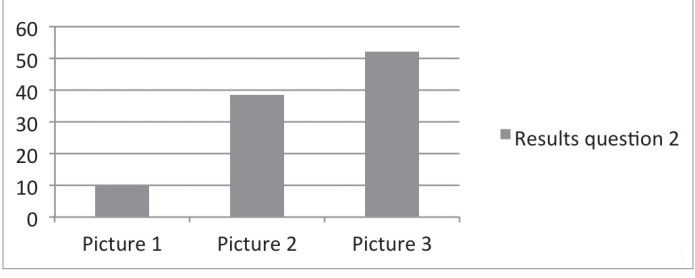
is special, different, imposing«, etc. Half of the students said that they liked it »… because it looks modern, contemporary«; many said »It reminds them of a modern and big city«. A total of 39.57 percent of the students that chose Picture 3 stated »They like it because it looks monumental«.



Graph 1: Comparison of answers to question 1.

In the case of the second question regarding the building materials, the results were as follows: Picture 1 was chosen by 9.76 percent of the students, Picture 2 by 38.21 percent and Picture 3 by 52.03 percent. Regarding the reasons for their selection, the students that chose Picture 1 stated »They are different from those usually used in our context«, »They would contribute to diversify our space«, »They are modern« and »They have nothing to do with traditional materials.«

Students that chose Pictures 2 and 3 answered with highly similar statements: »They are traditional«, »They are from our surroundings«, »They are beautiful«, »They are statically appropriate«, »They are not in contrast with the environment, they are contemporary« etc.

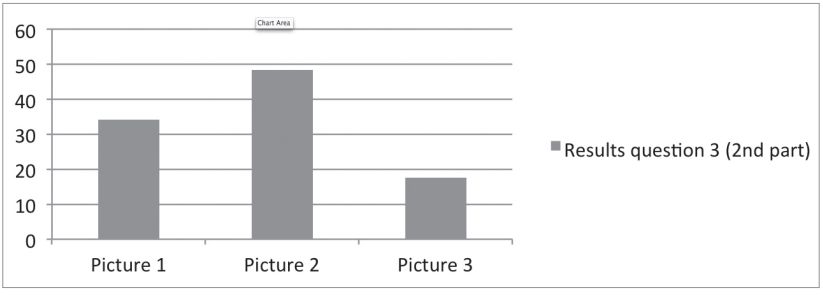


Graph 2: Comparison of answers to question 2.

The results were as follows in the case of the third question: 32.12 percent of the students answered that they do not miss any of the destroyed buildings, and 67.88 percent said that they would eventually miss the building that was in a particular location. Within the percentage that affirmed they miss the destroyed

buildings, the building on Picture 1 was chosen by 34.19 percent of the students, the building on Picture 2 by 48.31 percent and the building on Picture 3 by 17.5 per cent. Regarding the reasons for their selection, the students that chose Picture 1 stated »The building was on their way home and that they did had not gotten used to the spatial void yet«, »…that the building was a kind of refuge they now miss«, »…that there was a kiosk and other shops so waiting for the bus was not boring« etc. A total of 29.00 percent of the students said it was a historic monument that should not be destroyed. Students who chose Picture 2 stated »It is in a special position in the centre of the city and it should not be a neglected location«, »It would be better to leave the old building if the new one would not be built in a reasonable period of time«. Some of them said that they do not remember the old building but they »…do not like how the place looks like now«. Some of the students mentioned that they once visited the exhibition at the City Museum, where they saw there was an interesting place, the »Šumi bar« in that building, so it should not have been destroyed. Within the percentage of the students who affirmed they miss the destroyed buildings shown in Picture 3, the majority said that they did not remember exactly which buildings stood there but that the location is awful now; it is not a pleasant welcome for tourists coming to Ljubljana by train.

Graph 3: Comparison of answers to question 3, first part.



Graph 4: Comparison of answers to Question 3, second part (considering only the percentage - 67.88% - that affirmed they miss the destroyed buildings).

Discussion

It is not possible to develop definitive conclusions without much more information about the experiences of the students in the city. Nevertheless, the analysed questions were particularly intriguing, because they focused on the general characteristics of the reception of architecture in the eyes of the students. The test allowed for open answers so students could make their opinions known using their own sometimes non-professional or even hyperbolic language. In spite of the fact that figures do show conceptual oppositions, the answers in the case of Questions 1 and 2 are quite similar and reflect a distinctive attitude regarding the values architecture fosters in students: it is in a way the materialisation of romantic goals and desires: »the noble savage« hidden in a beautiful hut or the dream of progress, modernity and monumentality as a condition for self-acceptance. At this point, equilibrium becomes significant, implying the pre-existence of a dialectical pair, a counterbalance. In any case, it is a reflection of the fact that there is always an element that is missing and that we should pay attention to what kind of ideas we oppose in our analysis (Livingston, 1993; Willis, 1999).

In the case of the third question, the opinions differ. Some of the students are not aware of their relation to space in general and to certain places in particular and how their changes affect them, while others are quite aware of that. Nevertheless, the majority feels space as a category that is not constantly linked to their own vital experiences.

It is possible to conclude that these results show a lack that could be eventually filled, (paradoxically regarding the third question) by architecture. The architect can become »the realiser of a dream«, filling the blanks of what individuals see as a lack in the elements that originate their identity and identification with a specific space.

At the level of the curriculum content, the information we obtained tells us that in order to support sustainable development it is necessary to generate positive values and objective information. Specifically, the answers to the third question reveal that positive values are fostered on the basis of individual, vital, affective experiences. Where there was no emotional experience, there was no attachment to a place. Space did not become place, and thus it did not affect anybody. In these conditions, it is not probable that we could expect efforts to preserve the built and natural environment in a state of equilibrium so that it should be enjoyed not only in the present, but also by future generations.

At the level of the pedagogic methods and strategies to support sustainable development within art education, we must highlight experiential learning

in its different phases: concrete experience doing something, reflective observation, abstract conceptualisation or reflection on the previous phases and active experimentation or elaboration of plans of future action. Reflection on space and the environment is certainly a wide and complex field, with aesthetics being only one of its aspects (Räsänen, 2003).

Recent thinking about the reposition of architecture into the social sciences (Beck, Giddens, & Lash, 1994), so that architectural development can be seen in conjunction with other areas of culture opens new questions and encourages the location of dialectical pairs that consider the balance between the individual and the social, the historical and the contingent, local and foreign, style and place, utopian and real etc. From this perspective, it also allows for the encouraging of strategies of sustainable development. In my opinion, this is a good starting point for the reflection about the implementation of concrete activities in art education.

The inclusion of such contents from the very beginning of elementary school and the education of future architects defining their role as a kind of »social service« shaping the physical and cultural context of life would be a significant challenge, enhancing considerable freedom regarding the formal aspects of architecture and at the same time an immense sense of responsibility.

Conclusion: Conserving Cultural Energy

The dichotomy of ideas and facts in architecture is also the reason we can affirm that art education at the beginning of the 21st century faces new challenges. It is obvious that a global perspective on the pedagogical process of art education requires the inclusion of a new, specific way of accurately evaluating activities that would enable students to experience architecture from different points of view: as users, critics and eventually as producers. In fact, the understanding of past as well as contemporary interventions requires a set of complex and rich experiences, which is one of the principal objectives of education at all levels. These experiences must contain a clear consideration of spatial sustainable development. Some illustrative facts were shown at the beginning of the article. It is probably not a coincidence that none of the students mentioned sustainable development in their answers.

The barriers that once separated the different fields of art no longer exist. New technologies have brought an entirely new range of experiences and possibilities. Dynamic socio-cultural changes affected artistic expression of all kinds, also within architecture; debates about the cultural identity of minority groups, issues of national identity, rapid changes in technology, and the advent

of the post-modern philosophy of fragmentation and plurality have reshaped assumptions supporting art, architecture and education. These transformations gave affected the way we approach and learn about architecture.

The evolution of our societies is reflected in our building types and styles. This relationship gives older buildings a character we value and identify with.

When a building of historic merit is preserved or restored for adaptive reuse, its cultural energy is also »recycled«. Old buildings preserve the local culture and identity and create a sense of belonging. In a way, we recycle embodied human resource energy along with material energy. We bring alive the past to be a part of the future, creating valuable connections through time.

In this context, the commitment to authentic and actual problems in our societies must be between the main objectives of sustainable art education. One of them is the awareness about the characteristics of the built environment. Our cities are, in fact, the results of time-space plasters that function as units of spatial experiences in everyday life. The oldest buildings are often urban milestones. They are iconic points of reference, and their simple presence brings out a collection of unique meanings to the collective memory of a culture. Composed of strong formal and symbolic elements, they are easily recognisable. Regardless of whether they are still used for their initial function, they nevertheless invite passers-by to contemplation. Their demolition injures cities' images and memory in many cases. This theme – the recycling of architectural spaces instead of destruction – should be one of the necessary authentic tasks that could be realised within visual art education in order to develop awareness about the idea that it is possible to recover relevant objects in the urban framework that are no longer in use and to assign them new uses eventually associated to the contents of collective memory. An emphasis on the values of collective memory is undoubtedly another key goal of art education at all levels.

In effect, a global understanding of our past as well as our contemporary world requires this set of complex elements and rich »connecting experiences«, which should be one of the principal objectives of education at all levels, developing at the same time an unconditional connection of the art work with »everyday life conditions« and promoting the education of critical and responsible »perceivers« of the environment.

The next step in this research should be to consider the educational strategies and methods that would ensure an improvement in the awareness of the serious situation the world is facing. However, we should consider learning by experience as the basis of these strategies.

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Biographical note

Beatriz Gabriela Tomšič Čerkez, PhD, was born in Buenos Aires, Argentina were she got her degree as an architect at the Faculty of Architecture and Urbanism in 1987. In 1988 she moved to Slovenia and in 1993 she got her degree at the Academy of fine arts at the University in Ljubljana. Later she got her Mr. Sc. in Sociology of Culture at the Faculty of Arts in Ljubljana. She is a professor for Didactics of Art Education at the Department of art Education of the Faculty of Education in Ljubljana were she defended her doctoral thesis on experiential learning and space design. Her fields of interest are visual arts education, pedagogy of architecture, spatial perception, theory of Architecture, geometry.

Contemporary Art and Citizenship Education: The Possibilities of Cross-Curricular Links on the Level of Content

Metoda Kemperl[1]

Unlike the previous phenomenon of modern art, contemporary art strives to return to society and everyday life, while thematising the current issues that the individual faces here and now. One of its more frequent topics is that of sustainable development, and the accompanying issues of environment, values, relations to others, etc. All such topics are part of the concept of active citizenship, which is why understanding contemporary art calls for active citizenship. This particularly holds true for relational art, which demands active participation on the part of the viewer. This paper inquires into the possibilities of the connection of contemporary art and citizenship education in elementary schools. Contemporary pedagogic doctrine highly encourages cross-curricular teaching; therefore, I have focused my analysis on the curricula of the subjects of Art Education, and Citizenship and Patriotic Education and Ethics, determining that (from this perspective) their link is quite troublesome. The absence of contemporary art from the curriculum of Art Education has been criticised on many occasions, but the problem of its curriculum seems to be of a conceptual nature. Only by a more intense inter-institutional link between schools and contemporary art galleries and museums can the common goals of art education and citizenship education be realised. This paper will, therefore, strive to show potential cross curricular links in content on three examples of participatory practices (*Proletarians of All Countries, Beggar Robot* and *EU/Others*), while warning (from the pedagogic perspective) against the often neglected fact that contemporary art is experienced here and now.

Keywords: Contemporary art, Participatory art practices, Citizenship education, Art education, Cross-curricular links

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Links between Citizenship and Art education

The doctrine of contemporary pedagogy encourages cross-curricular teaching; consequently the most recent updates to the new 2011 curricula required even further emphasis on cross-curricular activities. Teachers and schools were required to link different subjects more closely; excursions and trips were also supposed to become more interdisciplinary and include cross-curricular fields (Karba, 2008). Key innovations of the elementary school curricula included cross-curricular teaching and cross-curricular topics. There have recently been many papers written on this issue in Slovenia with regard to citizenship education, most commonly seeing potential links with the subjects of History, Geography and Slovene Language (for instance Davies, 2003; Mihelj, 2003; Resnik Planinc, 2003; Slater, 2003; Justin, 2003; Kunaver, 2006; Kostrevc, 2006; Devjak, 2007).

The political philosopher and theoretician of citizenship Will Kymlicka asserts that citizen education should not constitute a separate part of the curriculum, but rather one of them main objectives and principles that shape the whole curriculum (Kymlicka, 1999). In Slovenia, it is most commonly realised within the subjects of Citizen and Patriotic Education, and Ethics (hereinafter: CPE). Some authors point out that programme content should be focused on the specific phenomena of pupils' surroundings, and that an interdisciplinary approach should deepen the understanding of their relations to the world or connect different subjects into an active project in which the links with everyday situations would reveal themselves (Drake, 1998, p. 154; Štemberger, 2007, p. 96). Interdisciplinary discussions ought to enable pupils to express their ideas and interpretations more easily, and to offer diverse opinions and perspectives (Hickman & Kiss, 2010). Knowledge conveyed in such a way is integrated and contextualised, thus stimulating the transfer of knowledge and skills from one field to another. Hickman and Kiss (2010) claim that teaching pupils to transmit knowledge and skills from one field to another would enable applicability as well as a more integral and in-depth understanding of contents and learning concepts. Through a study conducted in 2010, the authors detected positive links between the interdisciplinary approaches and the ability to transfer knowledge and skills. In a cross-curricular study, Rawding and Wall (1991) conducted an experiment with the cross-curricular teaching of religion and art. In interviews with the participating pupils, they established that some of them not only discovered links between art and faith, but also started integrating aspects of experiences and knowledge outside the frames of the subjects of instruction. That is to say that the pupils not only successfully linked the topics

of abovementioned subjects, but also learned the general concept of interdisciplinary thinking, while transferring that knowledge to other subjects and fields.

Since instruction and education are today perceived as means of life training, art education has a particularly salient role in this process (Hickman, 2005).

Bearing the above said in mind, all updated syllabi for elementary school subjects also propose cross-curricular teaching. Most syllabi not only suggest subjects suitable for cross-curricular links, but also examples of content for cross-curricular teaching. Moreover, they list examples of content and skills for cross-curricular activities on both vertical and horizontal levels of connection.

Only two among these syllabi limit themselves merely to listing potential subjects for cross-curricular teaching: CPE and Art Education (hereinafter referred to as AE). The first of these emphasises that culture and sustainable development education should represent the central elements of disciplinary and cross-curricular approaches to teaching, and that cross-curricular education acts as a key condition of implementing the approach as a whole (Učni načrt: program osnovna šola: državljanska in domovinska vzgoja ter etika, 2011, p. 20, 21). In contrast, the syllabus for AE is rather reserved towards concretising cross-curricular teaching.

At first, that seems rather unusual, since art in itself is already interdisciplinary and therefore most appropriate for cross-curricular teaching, as shown by Germ with the example of Greek art (2008, p. 43, 44). Every in-depth interpretation of an artwork requires an interdisciplinary approach, providing its multilayered explanation. As stated by Tavčar »[...] in museums and galleries, we endeavour to make young visitors link the artworks seen with the knowledge acquired in school within the subjects such as: history, geography, art history, literature, music etc. The visits enable them to bind together these contents, guided by museum educators in their descent into an artwork and its layers of meaning.« (Tavčar, 2008, p. 78).

Contemporary art as a socially engaged practice

Art is a communicative phenomenon, helping people understand various aspects of the world, which would otherwise remain beyond their reach. It is a key and crucial human and social activity (Freedman, 2003). Art is a social practice, since artists use their work to express their relationship to themselves, to others and to the world they live in; for that reason, they must effectively understand the social structure in which they act (Bourriaud, 2007, p. 92). Art is thus in itself connected with the concept of citizenship and should therefore, being a source of knowledge, convictions and values about ourselves and the

world, be a part of every citizen's education (Dobbs, 1998, p. 9). Art is close to the objectives of citizenship education in as much as the in-depth interpretation of the artwork, based on poststructuralist methods (Grierson, 2003, p. 102; Knight, 2010, p. 240, 241) necessarily includes critical thinking as well as forming of attitudes and values. Together with knowledge of history, geography and Slovene language, familiarity with European and Slovene art is of crucial importance for the formation and preservation of national identity, which in turn is a component of citizenship education. It is also intertwined with the concept of multiculturalism, which is in its own right one of the key points of departure in education, since the lack of familiarity with our own culture renders difficult the relationship with and understanding of others. The knowledge of art in various cultures helps pupils understand not only their artworks, but also their people (Dobbs, 1998, p. 11). Visiting museums, galleries and other public spaces that enable the experience of art, is a part of wider social engagement, which is also the goal of education for citizenship. In Slovenia, this is of even greater importance, since such institutions are funded by public money, which is also why engaged citizens should be interested in what sort of activity they are supporting.

Thus, becoming acquainted with museums should be seen as the compulsory part of the elementary school curriculum. In this way, according to Halstead and Pike (2006, p. 66), children, as future taxpayers, would be accustomed to consuming the very thing they fund, while developing a critical relationship to it. That is to say, if the citizens see no need for the production of artworks, the functioning of art institutions is financially at risk, according to the authors (Halstead & Pike, 2006, p. 66). Generally speaking, museums shape common values with their exhibition policies, and since their activities are state funded, one would deduce that the state concerns itself with the values it propagates through the funding of museums as public institutions.[2]

Art has always been perceived also as a part and means of education: that is to say as part of a long-term altering of our behaviour and demeanour (Vigotski, 1975, p. 319). The aesthetic experience and the response to it can lead a child to re-evaluation and reflection of his/her relations, values, expectations and even confrontation with its prejudice, which makes it potentially morally educative (Halstead & Pike, 2006, p. 64, 65). Due to its interdisciplinary nature, the suitable choice of an artwork (from whatever period it might originate)

2 This problem goes beyond the intent of this article and would probably be best replied to by philosophers or aesthetics scholars. We should here only warn that before the Enlightenment the two major supporters of art were the Church and the aristocracy (to a lesser extent also the bourgeoisie), who were well aware of what they were ordering or paying for (see also Žerovc, 2011c, p. 13, and Žerovc, 2012, pp. 10–12).

makes it easily linked with all the contents and objectives of citizenship education. Hills-Potter has already shown that art can induce people into participation in society and impart a relationship required for active citizenship, especially an empathic one (quoted in Halstead & Pike, 2006, p. 66).

Halstead and Pike found examples of art relevant for citizenship in the graffiti and the English painting of the 18th century, specifically in Hogarth's series *Harlot's Progress*, which is explicitly morally educative. They propose that the depiction of the story of a poor farm girl, who arrived to London in the beginning of the 18th century in search of a better life, becoming a prostitute and shortly after dying of syphilis, leaving behind a destitute child, serves to induce children into talks on sexual ethics, local authorities, current forms of prostitution, emmigration etc. Thus, they are supposed to realise the goals of citizenship education (Halstead & Pike, 2006, pp. 71–74).

In the light of Vigotski's assertion that art presents the original and the most powerful weapon in the battle for survival, that it is the most critical intersection of all biological and social processes of a person in society, and that without new art there cannot be a new man, (Vigotski, 1975, pp. 312–327), let us examine what contemporary art is like, especially in terms of its links with the concept of active citizenship.

Contemporary art differs highly from its predecessor, modern art, which endeavoured to liberate itself from the ideological constraints; it wanted to not be illustrative. The artists considered themselves geniuses, creators, inventors; the only imperative they stuck to was the search of the new and the original. The modernists treated the painting as a two-dimensional surface, covered with paint, refusing to show anything besides that. For that reason, modern art became acutely detached from society.

In contrast, contemporary artists are not interested in progress or the new, nor in specific trends; they are allowed the plurality of ideas, materials and media. Heterogeneity is one of crucial aspects of contemporary art. The will to approach life, society and speaking about our everyday life through various artistic practices is what many contemporary artists have in common. The presentation of contemporary art is no longer bound to museums and galleries, but rather moves to other public spaces, such as shopping malls, which provides it with an audience that is not in touch with art and would never be seen in an art institution. Many artists, rather than being closed in their studios, work in their social surroundings or in partnership with the community or visitors. Thus, collective aesthetics enter the limelight. Artists do not see their practice as an elevated activity, but rather compare their profession with others. That is why contemporary art is no longer an autonomous field detached from life, as

was the case with Modernism, but a field intertwined with the wider political, cultural and social context, while consciously responding to its position, as well as reflecting cultural and social issues of the present (Krauss, 1988; Groys, 2002, pp. 11–22; Weintraub, 2003; Millet, 2004, pp. 11–39; Zabel, 2000, pp. 261–264; Zabel, 2005, pp. 6–19). The artworks in which the audience actively participates, in which the audience is part of the art process, no longer revolve around the notion of the final product, but emphasise the idea that stays in participants' memory as well as the development of the artwork in their emotions. These sorts of works are finalised by explanations and actual involvement from the part of the audience (Millet, 2004, pp. 29–35). We speak of *relational art* (Bourriaud, 2007) or *participatory practices*, or of *socially engaged artistic practices* (Helguera, 2011), which appeared in the 1990s.

With their practices, contemporary artists strive to change people's perception of a certain problem. World famous performance artist Uwe Laysiepen has been intensively dealing with water in recent years. On the occasion of his participation on the project with the European Capital of Culture in Maribor, he wrote: »My wish is to give a different idea, different image of water. It is about making people think and changing their attitude to water, to feel more connected to it.« (Pungerčič, 2012). Šejla Kamerić, who has exhibited her work in Slovenia several times, wrote about her internationally renowned work *Bosnian Girl*: »My goal was not to find the wretched fellow who wrote such rubbish on the wall, but to divert the attention to the responsibility of those who send utterly immature people to conflict-stricken areas to save lives« (Megla, 2012). Sašo Sedlaček warned about the sell-out of public frequency spectrum in his project Infocalypse now!, stating: »Just recently we carried out the action named *Manifesto* in the parliament in order to give the MPs a lesson in proper behaviour.« (Tratnik, 2009, p. 17).[3]

Due to its plurality, contemporary art offers diverse views, thus setting an example of tolerance, respect and critical thinking. Artists today act as researchers of life in the 21st century, trying to react to various phenomena of our everyday existence. They focus on current social, political and economic issues, such as sustainable development, globalisation, migration or intercultural exchange, while others tackle more intimate questions of human relations, memory, life and death. All these issues concern the concept of citizenship. Many of today's social problems are omitted from the curricula and are also excluded from the mass media reporting. Using the example of discrimination, Mihelj showed (2003, p. 20) that although history textbooks for elementary schools

3 Sašo Sedlaček was in his function as an artist already involved in the teaching process (Kulturni bazar 2012: Program profesionalnega izobraževanja, 2012).

mention it, they do so only in the context of fascist and Nazi »occupiers«, with no reference to it in the context of the present. Contemporary art, by contrast, offers suggestive reflexions on discrimination, as we shall show further ahead. Contemporary art responds to current issues before they become part of wider awareness. That is why contemporary art helps us understand our present, offering an insight into the social structure we live in and encouraging us to take part in its creation. Through these participatory practices, the artist forms specific kinds of communities, while the viewers become involved in the process, thus allowing the artwork to take place within them, in their emotions that arise with their participation. What occurs is, in fact, a personal experience, which enables us to reflect a certain phenomenon, behaviour, or event. It forces the participants to experience even the traumatic, which can later be reflected upon by ourselves or in communication with others. Contemporary participatory practices also offer a possibility to execute a potentially morally questionable action on a symbolic level, thus creating a platform for contemplation. In Kolding (2000) and in Dornbirn (2006), participants were to that end invited to liquidise a goldfish in a blender (Žerovc, 2011a, p. 108). Before taking on the act, they were asked to thoroughly consider it, bearing in mind our ambivalent relationship to animals. It is clear that participatory practices are educative in their very essence, being remarkably similar to the pedagogical method of role-playing game and simulating concrete life experiences, both recommended for the process of teaching active citizenship (Židan, 2004, p. 51, 52; Učni načrt: program osnovna šola: državljanska in domovinska vzgoja ter etika, 2011, p. 20). It is necessary to emphasise that participation in contemporary art does not imply an acted simulation, but rather the authentic, true role play, which is much more convincing than merely observing an image. These practices are almost never individual, but emphatically collective, which is a fact that in itself encourages participants to exchange feelings and ideas after the event.

Since we still lack a methodology for evaluating contemporary art (Millet, 2004, p. 66), it is perhaps most convenient to help ourselves with post-structuralist methods in its understanding and pedagogic interpretation. These methods interweave various disciplines that also open the questions of ourselves (Larcher and Hooper-Greenhill, as quoted in Tavčar, 2001, p. 26). Such conversations enable the understanding not only of the artwork, but also ourselves and each other, while nurturing understanding towards the views and opinions of our peers, which is one of the objectives of citizenship education. While discussing contemporary art, the pupils simultaneously talk about the context in which it arose, the idea that it bears, and the reason it was created. In other words, about the world in which they live, thus widening their horizon,

asking questions and discussing contemporary issues they themselves face. They recognise the problems of contemporary society, which (again) is one of the goals of education for citizenship.

Let us now take a closer look at these goals. CPE is a compulsory subject in the 7th and 8th grades. I will try to analyse the objectives of this subject, establishing possible links with the contents dealt with in contemporary art.

(Lack of) links between the Art education syllabus and the syllabus for Citizenship and Patriotic education, and Ethics

The contents of contemporary artistic practices mentioned above can be associated with all of the general objectives of CPE (»the development of political literacy«, »of critical opinion and various opinions and values», »active inclusion of pupils in social life«). These objectives are developed through:

- discussions about the coexistence of different people and social groups, following of current social, political, economic and ecological issues,
- debates on the principles of ethics,
- recognising the violations of human or children's rights, etc. (Učni načrt: program osnovna šola: državljanska in domovinska vzgoja ter etika, 2011).

The contents of contemporary artistic practices are best linked to the following operative objectives for the 7th grade:

- They should understand the importance of mutual tolerance for the benefit of the community;
- They should understand the origins of the notion of others and of the different. They should be able to recognise stereotypes and prejudice in the media and everyday life, while developing a critical stance towards them. They should understand the importance of tolerance and mutual respect for the culture of coexistence;
- They should develop the ability to express opinions.

The contents of contemporary art practice also coincide with all of the objectives listed in the unit »Slovenia was established on the basis of human rights«. Within the 8th grade syllabus, contemporary art contents align with the unit »Finances, labour and economy«, as well as with all goals stated in the unit »World community«.

Contemporary art is omitted from the AE syllabus, since the syllabus is structured in terms of artistic modelling through which the pupils learn to

express themselves. It consists of the modelling on a surface and the three-dimensional modelling. It excludes contemporary art media as well as contemporary art per se, since the syllabus does not include artistic periods or styles. The exclusion of contemporary art and its media has been criticised for almost the previous fifteen years, first by Zupančič (previously Vrlič) (Vrlič, 1998; Vrlič, 2000; Vrlič, 2001; Vrlič & Čagran, 2003; Zupančič, 2008; Duh & Zupančič, 2009), but the real problem of the syllabus is its inadequate conceptual structure (Bračun Sova & Kemperl, 2012). In the published studies and examples of successful practices, we find that Zupančič and Duh also showed their pupils the works of contemporary artists. Their approach seems rather inconsistent, since they included typically modernist works, such as those of Piet Mondrian (Duh & Zupančič, 2009; Duh & Herzog, 2012, p. 25). Moreover, they usually choose works by foreign artists (reproductions of artworks), which cannot be found in local museums and galleries.[4] From Duh's comment that in choosing the artwork one ought to consider its quality (Duh, 2008, p. 103; Duh & Zupančič, 2009; Duh & Herzog, 2011, pp. 21-22), we are left to conclude the works by Slovene artists and those in Slovene galleries fail in complying with these standards of quality.

There is only one objective to be found among the general goals of the AE Syllabus that could be accomplished through introducing contemporary artistic practices, namely that »the pupils should develop sensibility towards cultural and artistic heritage, and cultural diversity«. In fact, this has nothing to do with contemporary art practices, which do not yet constitute a heritage. Furthermore, the operative goals for the third triad state:

- with the help of artworks, pupils' own works, and examples from nature and the environment, they become familiar with the concepts associated with modelling on a surface,
- they develop the ability to analyse and value the works of art,
- they become familiar with the artworks of national and international cultural heritage,
- with the help of artworks, pupils' own works, and examples from nature and the environment, they become acquainted with the concepts associated with 3D modelling,
- they become familiar with relevant artworks from different fields of art, which are part of national and world cultural heritage.

The third and the fifth of the listed goals cannot be associated with contemporary art, since it does not constitute heritage. The second and the fourth

4 With the exception of a study by Zupančič, published in 2001 (Vrlič, 2001).

objective could be linked with contemporary art practices, but these goals only imply insights into art concepts such as composition, saturated colour, colour harmony, air perspective, horizon, spatial plan, architectural sculpture, masonry and framing in construction, and composition by adding elements. Contemporary art, however, places more emphasis on content, ideas or concepts than on form. Therefore, introducing contemporary art could be placed only within the second objective. It is interested that the objectives for the first triad state that during visits to art exhibitions pupils become open to diverse modes of artistic expression, while the objectives for the next two triads omit this.

Visits to galleries are next mentioned in the chapter dedicated to didactic recommendations. In the very beginning, it states: »In the frame of art education, the teachers constantly provide cultural education. They meaningfully include examples of artworks, in images or as originals, in particular stages of the teaching process. In order to attain an in-depth understanding of artworks, the teacher should take the pupils for a visit of a museum or a gallery exhibition, organise an artist talk or a studio visit, at least once a year« (author's translation).

Further on, the didactic recommendations are divided according to triads, but there are no instructions for the third triad for the visits or understanding artworks. What exactly is meant by understanding artworks is explained in the didactic recommendation for the first triad: »They integrate the artworks meaningfully and creatively in particular stages of the teaching process as an illustration (means of instruction) for familiarising artistic concepts, particularities of artistic techniques or motives« (author's translation). This once again shows the conceptual problem of the syllabus's basic scheme (Bračun Sova & Kemperl, 2012). There is also no mention of understanding of artworks in the context of verification and assessment of knowledge, which might be due to the fact that in AE only pupils' works are supposed to be graded. We could nevertheless grade pupil's knowledge through his work, especially in terms of the standard of knowledge that states: »explain the importance of cultural heritage in Slovenia and the world«. We are left to wonder if this standard also included the understanding of art and why it seems to include all cultural heritage, and not only that of an artistic nature.

The analysis shows that we are entitled to wonder whether the pupils of the third triad in AE lessons actually come into contact with contemporary artistic practices, and if so, to ask ourselves in what way they deal with them. This is the point where we reach the issue of cross-curricular teaching.

The CPE Syllabus offers remarkably few recommendations for cross-curricular teaching, emphasising only the central position of cultural education

and sustainable development education in the context of disciplinary and cross-curricular approaches to teaching. Neither does it concretise the contents and subjects with which the connection is possible. The definition of the subject lists as two among five key modes of achieving the goals of AE »the application of problem-based tasks to art and visual culture« and »the link with other groups of subjects as well as with everyday life.« It recommends the intertwining on the level of artistic concepts: »1. Linking artistic concepts with the concepts from fields of other subjects, based on verbal, oral or written interpretation. 2. Linking artistic concepts with concepts from fields of other subjects, based on artistic interpretation – artistic expression. The proposed tasks are to be realised in an artistic way.« The statement is based on an professional article by Tacol (2002), suggesting the two approaches listed above. In the explanation of the second approach, Tacol states that the discussed artistic problem can be an artistic motif. She gives an example of a horse motif, asserting that the artistic exercise should nevertheless be liked with a certain artistic concept, such as a dot, a line, primary or mixed colours, etc. She adds that »interdisciplinary teaching merely in terms of extracting motifs out of contents of other subjects and their realisation through a certain art technique is unacceptable« (ibid., p. 46). In any case, cross-curricular teaching in the context of AE must be associated with an artistic concept, which is artistically theoretical and conceptually modernist, while also discernible in the pupil's work.

The analysis implies that the goals, such as developing the ability of analysing and assessing works of art, or understanding the artworks of national and international cultural heritage, are in fact not to be connected, since they are not foreseen in the proposed version of cross-curricular teaching.

It is perhaps for that reason that the daily activities in elementary schools only rarely include artistic activities, be it on the perceptive or productive level, as ascertained by Duh and Herzog (2012). This probably accounts for the fact that there are so few published ideas on how to link AE and citizenship; the existent few are associated with only one topic, conservation of environment, building on the issues of waste. In this context, the main proof of pupils' understanding of the issue are their works made of refuse (Zupančič, 2009; Duh & Herzog, 2011; Duh & Herzog, 2012).[5] The use of litter as artistic material may point more to the support of ideology of recycling that to the true understanding of the problem. It is often the case that the companies that recycle waste are the same ones that consciously produce it in order to make a profit. Large American and European companies export their toxic waste to Africa causing deaths of local people as Greenpeace's studies have clearly shown (Omladič, 2011, p. 12).

5 At this point, one must caution against the inconsistencies in the choice of artists.

Flajšman (2009) took up a more in-depth study on AE and environmental issues from the perspective of environmental protection, trying to strike a balance between communicativeness and art forms. During his research, he showed pupils ten works of art with environmental messages. It is intriguing that eight among them were posters or postcards with very clearly articulated messages, since this is one of the characteristics of a good poster. Only two were thus works of art, and were shown on images, both being works by American artists. It is also interesting that the author decided to carry out the study in the 9th grade, which meant that he could not connect it to the subject Citizenship and Ethics, in the framework of cross-curricular teaching. In this period, the environmental issues were dealt with by these subjects in the 8th grade (Učni načrt: program osnovna šola: državljanska vzgoja in etika, 1999, p. 32).

The compelling fact remains that none of the mentioned authors informed the pupils about the works of the Slovene artistic collective OHO, whose members were the first in Slovenia to start dealing with environmental issues. In the third phase of the group's existence, they were executing land art projects, which were much less invasive than those carried out by their American colleagues, and were intended to be erased by the passing of time (Kočevar, 2009, p. 150). Environmental issues were the main topic of Marko Pogačnik's subsequent solo career (Ravnikar, 2009, p. 32), as well as that of Marjetica Potrč, a world-renowned Slovene artist (Ravnikar, 2009, p. 32; Vovk, 2009, pp. 70–76). The previously mentioned Sašo Sedlaček, one of Slovenia's most prominent contemporary artists, has been dealing with the conservation of environment, mostly with issues of waste and recycling, for the last ten years (Grafenauer, 2011). These artists hardly lack quality. Marko Pogačnik, for example, had an extensive retrospective in 2012 in the Museum of Modern Art in Ljubljana, entitled *The Art of Life – The Life of Art*. At the time this article is being written, Pogačnik is lecturing on the topic of healing the Earth with litopuncture at UNESCO headquarters in Paris (M. K., 2012). In 2011 Marjetica Potrč made Newsweek magazine's list as the third most influential contemporary artist in the world, emphasising her social engagement in the favelas of South America.[6] Sašo Sedlaček was awarded several Slovene and international prizes, among others the OHO Award in 2006; in 2012, he was nominated for Henkel Art Award for Central and Eastern European Artists (T. C., 2012). In 2012, his solo exhibition was held at the Koroška Art Gallery in Slovenj Gradec, also shown in 2012 at the Jakopič Gallery in Ljubljana.

6 Marjetica Potrč participated at the Venice Biennial, The Sao Paolo Biennial, the Skulptur-Projekte show in Münster, among others. In 2000 she was awarded the prestigious Hugo Boss International Award for Contemporary Art, which included a solo show in the Guggenheim Museum in New York (Gopnik, 2011).

Three examples: *Proletarians of all countries, Beggar robot, EU/others*

To illustrate the possibility of connecting participatory practices with Citizen Education, let us take one of the general objectives of the CPE Syllabus: the perception of the stereotypic representations of the others and of the different. My choice of objective was influenced (among others) by the findings of researchers in the project *Comparative Study of Citizen Education and Instruction – CEP* (the research took place in 1999 and included pupils from 28 countries), which ascertains that Slovene pupils have a less positive relationship to immigrants, a fact that causes concern among social scientists and requires further analysis (Educational Research Institute, 2002[7]).

Art itself has in the past generated prejudices. Thus, the relief on the tympanum of St. Madeleine's church in Vézelay from 1130 can serve as an incentive for a discussion on discrimination or relationship to the other. The scene depicts Christ instructing the Apostles to spread the Christian faith all over the world. The lintel of the portal shows people that had not yet accepted the faith, and are therefore shown as »half-men« – some have pig snouts, others elephant ears, or are depicted as pigmies. The scene serves as a way of establishing the image of the infidels in the period of the Crusades, in which the Church played a crucial part.

Many contemporary artists tackle the issue from an entirely different perspective, focusing on the means of changing stereotypical representations. To illustrate this point, I will introduce three artworks or art events that were presented in Ljubljana over the previous ten years. Contact with original artworks is of key importance for all those involved with the arts (Charman, Rose, & Wilson, 2006; Talboys, 2010). This particularly holds true for participatory artistic practices, since in their case, the artwork takes place in us and is therefore impossible to experience via reproduction. I intend to illuminate only a segment of the otherwise multi-layered and multifaceted artworks that concern the objective mentioned above.

On the occasion of the 29th Biennial of Graphic Arts in 2011 in Ljubljana, dedicated to the Art Event, we had an opportunity to participate in the artwork of the New York and Istanbul-based Turkish artist Serkan Őzkay. The installation entitled *Proletarians of All Countries (Proletarier aller Länder)* featured thousands of small red plastic foam figurines, representing workers, glued to the gallery floor, with their clenched fists raised (Žerovc, 2011b, pp. 142–143).

7 In another international comparative study, conducted ten years later (2009) Slovene pupils had ceased to negatively deviate from the international average in that respect (Šimenc, 2012, p. 96).

The figurines were laid out so close to one another that the visitor could not help stepping over them on his way to the next gallery hall. The visitor thus deliberately walked over the working class or even jumped on them, since the foam figurines would immediately return to their original position. Nevertheless by the end of the show some workers »yielded« under the weight of their oppressors. The set up was so distressing for some visitors that they even chose not to pass to the next room, since the idea of stepping over the workers was too much for them to bear. Others walked over the figurines as delicately as possible; some, on the other hand, utterly enjoyed squashing them. The artist chose a decidedly humorous way to induce us to reflect the issues of the proletariat nowadays and their place in society.

The next artwork is *Beggar Robot* (*Žicar*) by Sašo Sedlaček, who in 2006 roamed Ljubljana's City Park shopping centre, as well as the streets of Tokyo and Taipei. A year later, Ljubljana's homeless made good use of it; in 2012, we finally had a chance to see it exhibited at Sedlaček's retrospective. Sašo Sedlaček, one of the most prominent contemporary Slovene artists, tackles garbage, recycling and interpersonal relationships in the globalised world as his main concerns. He not only warns about these issues, but also offers (artistic) solutions. *Beggar Robot* was awarded several prizes abroad, as well as the Slovene OHO Award (Tratnik, 2009; Grafenauer, 2011). The work is a robot made out of discarded computer technology. In 2006, it circled Ljubljana's shopping area, where begging is banned, asking for money in bad Slovene. The robot proved a prolific beggar, earning more than 1000 Slovene tolars an hour. The project clearly showed that rather than to a living being, we give money to a microchip, to a robot that entertains us through its technologised humanity. The beggar was especially popular with mothers with children, who usually avoid the homeless. The reactions in Taipei were similar. *Beggar Robot* soon attracted attention from passers-by, unlike the human beggar standing lonely next to him. After the arrival of a policeman, the human vagrant was forced to leave, while the robot was allowed to proceed (Grafenauer, 2011, pp. 30–33).

In the frame of the European contemporary Arts Biennial Manifesta, which in 2000 took place in Ljubljana with the title *Borderline Syndrome*, Šejla Kamerić realised the installation *EU/Others*. Sarajevo-born Kamerić gained international repute with a 2003 work showing her image, staring at the viewer, with a graffiti inscription over it. The graffiti was written by a Dutch UN soldier on a wall of Srebrenica army barracks; the work thus tried to warn against prejudices and the need to liberate ourselves from them. In Ljubljana, she had signs attached to city's main square, reading *EU citizens* and *Others*, which at the period were seen on all EU border crossings. Today, *Others* has been replaced

by a more politically correct term *Non-European Citizens*. Kamerić found the whole idea shocking as she as a Bosnian citizen was at the time able to travel only without a visa to a handful of countries. It made her reflect on the question of identity, about who the others are and what her place as the other was on a pan-European biennial of contemporary art in Ljubljana. In that period, Slovenes were also among those with the status of others (Kamerić, 2000).

These three examples alone confirm Vigotsky's thesis that the »new« art offers endless possibilities for a »new« man. Or to rephrase it in the context of present-day circumstances: contemporary art can show us the way forward, the way out of crisis (environmental, interpersonal, of values etc.) contemporary art need only be followed, understood and experienced.

Conclusion

If, in the future, the concept of active citizenship begins to become adapted to the globalised and multicultural world, if it starts dealing with economic, political and social inequality not only within states alone, but internationally, taking as one of its foundations universal human rights, in other words global citizenship education (Židan, 2007, p. 14; Demaine, 2010; Davies & Evans Ried, 2010, p. 217), understanding and experiencing contemporary art will indeed prove essential. The analysis showed that through familiarity with the contents of contemporary art, we can realise the objectives of active citizenship. Contemporary art is unique in recognising and critiquing truly current issues that are excluded from media coverage. It identifies the issues as they appear and anticipates their consequences. Sedlaček's 2003 action *Just do it!*, in which he walled over the entrance to one of Ljubljana's shopping malls with bricks made of advertisement brochures, tackles both the problem of consumption and that of waste and recycling. It was carried out at the height of Slovenian consumption frenzy, while we were all enthusiastic about the abundance advertising materials overflowing our letter boxes (Grafenauer, 2011, pp. 24–26). Šejla Kamerić covered the walls of Sarajevo with her image of the *Bosnian Girl* long before the international community recognised the Srebrenica genocide (Megla, 2012, p. 24).

Integrating contemporary art into the syllabus as it is conceived now seems problematic, since the experience of contemporary art, if it is to have the intended effect, is one of the present moment. Introducing contemporary art to the current syllabus would inevitably lead, due to unavoidable time lapse, to the loss of its contemporaneity. What is needed is a different concept of syllabus, as stated earlier (Bračun Sova & Kemperl, 2012).

It is extremely important to enable as much authentic contact with contemporary art as possible, simultaneously using up-to-date methods for experiencing and understanding art. Compared to earlier art, contemporary art is more difficult to teach in the classroom, since one can hardly reproduce an artistic event that requires one's participation. For that reason, a greater emphasis in the syllabus should be put on visits to museums, galleries and other spaces where contemporary art is presented, or artistic events take place. It is here that the pupils could be taught active citizenship in an authentic way, which would also prove beneficial for both AE and CPE. That, however, requires a change of the concept of cross-curricular teaching of AE.

The foundation for a more frequent direct contact with contemporary art is found in the White Book on education, which explicitly defines the principles of cooperation between the school and its surroundings (Bela knjiga, 2011, pp. 114–117). A question arises from the point of view of inter-institutional cooperation about the qualifications of art teachers and museum educators. One would expect more commitment from the part of contemporary art institutions in attracting school groups, preparing materials on artwork and artists and introducing new interdisciplinary methods of work to teachers. Apart from the artist, it is the curator who is most familiar with the current art production. Most contemporary artists are not yet sufficiently known, which means teachers find it difficult to obtain adequate materials and sources. Slovene curators are unfortunately insufficiently aware of that role.

The responsibility of an elementary school should include offering pupils the tools needed to assess and engage with the scale of visual images never before encountered (Knight, 2010, p. 238). That is why we must decide whether we want our children to be raised by mass culture products of Hollywood provenance, which still promote the ideology of white male supremacy (as in the 2010 family film Marmaduke as well as other Disney products, analysed by Dorfman and Mattelart (2007)), or would rather discuss current social issues assisted by contemporary art in its attempt to change stereotypical images of the others and of us. In that respect, as was the case with the English education system a decade ago (quoted in Halstead & Pike, 2006), the potential of art in Slovenia remains utterly unutilised.

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Sodobna umetnost in državljanska vzgoja – vprašanje mogočih medpredmetnih povezav na vsebinski ravni

Metoda Kemperl[1]

Sodobna umetnost se v primerjavi s predhodno moderno umetnostjo razlikuje v tem, da se spet vrača k družbi in vsakdanjemu življenju ter da tematizira aktualne težave, s katerimi se srečuje človek tukaj in zdaj. Zelo pogosta tema je trajnostni razvoj in s tem povezane vsebine, kot so: okoljevarstvo, vrednote, odnos do drugega itn. To so hkrati teme, ki sodijo v koncept aktivnega državljanstva, zato razumevanje sodobne umetnosti pravzaprav zahteva aktivno državljanstvo. Še posebej to velja za relacijsko umetnost, ki od gledalca zahteva aktivno participacijo v umetnini. V prispevku se sprašujem, kako uresničevati povezanost sodobne umetnosti in državljanske vzgoje v osnovni šoli. Sodobna pedagoška doktrina zelo spodbuja medpredmetno povezovanje, zato sem analizirala učna načrta predmetov likovna vzgoja ter državljanska in domovinska vzgoja ter etika in ugotovila, da sta s tega vidika težko povezljiva. Na odsotnost sodobne umetnosti v učnem načrtu za likovno vzgojo se sicer že dlje časa opozarja, a težava učnega načrta je konceptualne narave. Skupne cilje državljanske in likovne vzgoje je mogoče uresničevati z intenzivnejšim medinstitucionalnim povezovanjem šol z galerijami in muzeji, ki predstavljajo sodobno umetnost. Na treh primerih sodobnih umetnin, natančneje participatornih praks (*Proletarier aller Länder, Žicar* in *EU/Others*) pokažem na mogočo medpredmetno povezavo na vsebinski ravni in opozorim na s pedagoškega vidika pogosto spregledano dejstvo, da sodobno umetnost doživljamo tukaj in zdaj.

Ključne besede: sodobna umetnost, participatorne likovne prakse, državljanska vzgoja, likovna vzgoja, medpredmetne povezave

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Povezava državljanske vzgoje in likovne vzgoje

Sodobna pedagoška doktrina spodbuja medpredmetno povezovanje, zato so tudi zadnja izhodišča za kurikularno prenovo od piscev posodobljenih učnih načrtov iz leta 2011 terjala, da medpredmetno povezovanje bolj poudarjajo. Posledično naj bi tudi šole oz. učitelji predmete med seboj povezovali, ekskurzije in izleti naj bi bili bolj interdisciplinarni in naj bi vključevali medpredmetna področja (Karba, 2008). Ena ključnih novosti vseh posodobitvenih učnih načrtov v osnovni šoli je medpredmetno povezovanje in kroskurikularne teme. Na to temo je bilo pri nas v zadnjem času napisanih tudi veliko člankov, ki se tičejo državljanske vzgoje, prevladujejo pa tisti, ki povezovanje vidijo s predmeti zgodovina, geografija in slovenščina (na primer Davies, 2003; Mihelj, 2003; Resnik Planinc 2003; Slater, 2003; Justin, 2003; Kunaver, 2006; Kostrevc, 2006; Devjak, 2007).

Politični filozof in teoretik državljanske vzgoje Will Kymlicka trdi, naj državljanska vzgoja ne bo izoliran sestavni del učnega programa, temveč eden izmed ciljev in načel, ki oblikuje celoten program (Kymlicka, 1999). Pri nas se v osnovni šoli najbolj udejanja pri predmetu državljanska in domovinska vzgoja ter etika (v nadaljevanju DDE). Nekateri teoretiki pri tem poudarjajo, naj bodo vsebine usmerjene na določene pojave v učenčevem okolju, naj bi povezovanje vodilo k globljemu razumevanju odnosov do resničnega sveta ali da naj več predmetov povežejo v aktiven projekt, v katerem bodo otroci videli povezave z vsakodnevnimi situacijami (Drake, 1998, str. 154; Štemberger, 2007, str. 96). Interdisciplinarne diskusije učencu omogočajo lažje izražanje lastnih idej in interpretacij ter spodbujajo podajanje različnih mnenj in vidikov (Hickman & Kiss, 2010). Tako posredovano znanje je integrirano, se povezuje in spodbuja transfer vedenja in sposobnosti z enega področja na drugega. Hickmann in Kiss (2010) trdita, da bi z učenjem prenašanja znanja in spretnosti z enega na drugo področje učencem omogočili uporabnost in celovitejše ter globlje razumevanje snovi in učnih konceptov. V raziskavi iz leta 2010 sta avtorja ugotovila pozitivne povezave med interdisciplinarnim pristopi ter sposobnostjo transferja znanja in spretnosti. Rawding in Wall (1991) sta v kroskurikularni študiji izvedla poskus medpredmetnega poučevanja religije in umetnosti. V intervjujih s sodelujočimi učenci sta ugotovila, da so nekateri izmed njih odkrili ne le povezave med umetnostjo in verstvi, temveč so začeli integrirati vidike izkušenj in znanj onkraj okvirov šolskih predmetov. Torej učenci niso zgolj uspešno povezali tem dotičnih predmetov, ampak so se naučili koncepta medpredmetnega mišljenja na splošno in to znanje prenesli tudi na primere drugih predmetov in področij.

Ker se danes na vzgojo in izobraževanje gleda tudi kot na usposabljanje za življenje, ima likovna vzgoja v tem procesu pomembno mesto (Hickman, 2005).

Glede na povedano imajo vsi posodobljeni učni načrti obveznih osnovnošolskih predmetov predlagano tudi medpredmetno povezovanje. Večina učnih načrtov ne navaja le predmetov, s katerimi je možno povezovanje, ampak tudi primere vsebin za medpredmetno povezovanje. Poleg tega so navedeni primeri vsebin in veščin za kroskurikularne dejavnosti tako na vertikalni kot na horizontalni ravni povezanosti.

Le dva izmed teh učnih načrtov (v nadaljevanju UN) ostajata le pri navedbi predmetov, s katerimi je možno povezovanje, in to sta predmeta DDE in likovna vzgoja (v nadaljevanju LV). Prvi ob navedenih UN poudarja, da naj bosta kulturna vzgoja in vzgoja za trajnostni razvoj osrednji sestavini predmetnega in medpredmetnega pristopa poučevanja ter da je medpredmetno povezovanje ključni pogoj za izvedbo celostnega pristopa (UV, DDE, 2011, str. 20, 21). Prav UN za LV pa je do konkretiziranja medpredmetnih povezav zelo zadržan.

Na prvi pogled se zdi to precej nenavadno, saj je umetnost že sama po sebi interdisciplinarna in zato kot nalašč za medpredmetno povezovanje, kot je to na primeru grške umetnosti pokazal T. Germ (2008, str. 43, 44). Pri vsaki poglobljeni interpretaciji umetnine je potreben interdisciplinaren pristop oz. mora biti razlaga umetniškega dela večplastna. Ali kot je zapisala že L. Tavčar, »/…/ poskušamo v umetnostnih muzejih in galerijah doseči, da mladi obiskovalci ogled umetniških del povežejo z v šoli pridobljenimi znanji in predmeti, kot so: zgodovina, geografija, umetnostna zgodovina, književnost, glasba itd. Ogledi jim omogočijo, da ta znanja povežejo, ko pod vodstvom muzejskega pedagoga prodirajo v pomenske plasti umetniškega dela« (Tavčar, 2009, str. 78).

Sodobna umetnost kot angažirana družbena praksa

Umetnost je komunikativna in pomaga ljudem razumeti vidike sveta, ki jih sicer ne bi mogli razumeti. Je osrednja ter bistvena človeška in družbena aktivnost (Stibbs, 1998, str. 202; Freedman, 2003). Umetnost je družbena praksa, saj umetnik skozi umetniško delo izraža svoj odnos do sebe, odnos do drugih in odnos do sveta, v katerim živi, zato mora dobro razumeti družbeni ustroj, v katerem deluje (Bourriaud, 2007, str. 92). Tako je umetnost že sama po sebi povezana s konceptom državljanstva oz. bi morala postati del edukacije vsakega državljana, saj je vir znanja, prepričanj in vrednot o nas samih in o svetu (Dobbs, 1998, str. 9). S cilji državljanske vzgoje se povezuje, ker poglobljena obravnava umetnine, ki temelji na poststrukturalističnih metodah (Grierson, 2003, str. 102; Knight, 2010, str. 240, 241), nujno vsebuje kritično mišljenje ter oblikovanje stališč in vrednot. Poleg zgodovine, geografije in slovenščine je poznavanje evropske in slovenske umetnosti ključnega pomena za ustvarjanje in ohranjanje nacionalne identitete,

kar je sestavina domovinske vzgoje. To je povezano tudi z multikulturnostjo, ki je prav tako ena temeljnih usmeritev vzgoje in izobraževanja, saj če ne poznamo in razumemo svoje kulture, težko vzpostavimo odnos do druge kulture in jo težje razumemo. Poznavanje umetnosti mnogih kultur pa pomaga razumeti ljudi teh kultur, ne samo njihovih umetniških del (Dobbs, 1998, str. 11). Obiskovanje muzejev, galerij in drugih javnih prostorov, kjer lahko doživljamo umetniška dela, je del angažiranega družbenega in socialnega delovanja, k čemur spodbuja državljanska vzgoja. To je v Sloveniji še toliko bolj pomembno, saj so pri nas take ustanove pretežno financirane iz javnega denarja in aktivnega državljana bi moralo zanimati, kakšne aktivnosti finančno podpira. Zato bi moralo biti navajanje na obiskovanje muzejev obvezni del osnovnošolskega kurikuluma. Na ta način bi se, kot opozarjata Halstead in Pike (2006, str. 66), otroke kot bodoče davkoplačevalce navajalo na uporabljanje tistega, kar bodo plačevali, in bodo do tega, kar plačujejo, tudi vzpostavili kritičen odnos. Namreč, pravita avtorja, če državljani ne čutijo potrebe po produkciji umetniških del, je lahko delovanje takih institucij finančno ogroženo (Halstead & Pike, 2006, str. 66). Muzeji na splošno s svojo razstavno politiko oblikujejo vrednote, ker pa so te dejavnosti pri nas financirane iz državne blagajne, bi sklepali, da se država sprašuje, katere vrednote preko muzejev javnih družbenih institucij podpira.[2]

Na umetnost se je že od nekdaj gledalo tudi kot na del in kot sredstvo vzgoje in izobraževanja oz. kot del dolgoročnega spreminjanja našega vedênja in obnašanja (Vigotski, 1975, str. 319). Estetsko doživetje in odziv nanj lahko otroka pripelje do tega, da začne ponovno ocenjevati in premišljevati o svojem odnosu, vrednotah, pričakovanjih in se celo sooča s svojimi predsodki, zato je lahko moralno edukativna (Halstead & Pike, 2006, str. 64, 65). Ker je interdisciplinarna, se s pravo izbiro umetnine (iz katerega koli obdobja) lahko povezuje skoraj z vsemi vsebinami in cilji državljanske vzgoje. P. Hills-Potter je že dokazala, da umetniška dela lahko spodbujajo sodelovanje v družbi in privzgajajo odnos, potreben za aktivno državljanstvo, še posebej empatijo (citirano v Halstead & Pike, 2006, str. 66).

Halstead in Pike sta sicer za državljansko vzgojo relevantno umetnost našla v grafitih in angleškem slikarstvu 18. stoletja, konkretneje Hogartovo serijo *Harlots Progress*, ki je močno moralno edukativna. Predlagata, da se ob upodobitvi zgodbe o revni kmetici, ki je v začetku 18. stoletja prišla v London iskat boljšega življenja, postala prostitutka, kmalu umrla za sifilisom, za sabo pa pustila nepreskrbljenega otroka, otroci pogovarjajo o seksualni etiki, zakonu, lokalni avtoriteti, sodobnih oblikah prostitucije, izsiljevanju itd. ter s tem uresničujejo

2 Ta problem sicer presega namen tega članka in verjetno bi nanj najbolje odgovorili filozofi oz. estetiki. Na tem mestu lahko opozorimo le, da sta bila pred razsvetljenstvom glavna podpornika umetnosti Cerkev in plemstvo (ter v manjši meri meščanstvo), ki sta zelo dobro vedela, kaj naročata oz. plačujeta (glej tudi Žerovc, 2011c, str. 13 in Žerovc, 2012, str. 10-12).

cilje državljanske vzgoje (Halstead & Pike, 2006, str. 71–74).

Vigotski pravi, da je umetnost prvobitno in najmočnejše orožje v borbi za obstanek, je najpomembnejše stičišče vseh bioloških in socialnih procesov osebnosti v družbi, brez nove umetnosti ne more biti niti novega človeka (Vigotski, 1975, str. 312–327). Kakšna je torej sodobna umetnost in kako se sodobna umetnost povezuje s konceptom aktivnega državljanstva?

Sodobna umetnost se precej razlikuje od svoje predhodnice – moderne umetnosti. Moderna umetnost se je hotela osamosvojiti od ideologij, ni hotela biti ilustrativna, umetniki so se imeli za genije, stvaritelje, izumitelje, edini diktat, ki so se ga držali, pa je bilo iskanje novega in originalnega. Modernisti so se ukvarjali s sliko kot dvodimenzionalno površino, ki je pokrita z barvami, in niso hoteli, da bi prikazovala kar koli drugega, zato se je moderna umetnost zelo odmaknila od družbe. Sodobnih umetnikov pa ne zanima novo ali napredek, ne zanimajo jih točno določene stilne usmeritve, ampak jim je dovoljen pluralizem idej, materialov in medijev, zato je ena bistvenih vidikov sodobne umetnosti heterogenost. Mnogim sodobnim umetnikom je skupno, da se hočejo približati življenju, družbi, zato so skozi najrazličnejše likovne prakse začeli govoriti o našem vsakdanjem življenju. Predstavitev sodobne umetnosti ni več vezana le na muzeje in galerije, ampak se seli tudi v druge javne prostore, na primer v nakupovalna središča, s tem pa privablja publiko, ki sicer ni v stiku z umetnostjo in nikoli ne bi stopila v umetnostni muzej ali galerijo. Mnogi umetniki bolj kot sami v svojem ateljeju delajo v socialnih in okoljskih situacijah ali v partnerstvu s skupnostmi ali obiskovalci, zato je v ospredje stopila kolektivna estetika. Umetniki svoje dejavnosti nimajo več za vzvišeno dejavnost, ampak svoj poklic primerjajo z drugimi poklici. Tako sodobna umetnost ni več avtonomno, iz življenja izvzeto polje (kot je bilo v modernizmu), ampak območje, ki je vpeto v širši politični, kulturni in družbeni kontekst, se na to vpetost zavestno odziva in je polje za refleksijo in razmislek o kulturnih in družbenih problemih sedanjosti (Krauss, 1988; Groys, 2002, str. 11–22; Weintraub, 2003; Millet, 2004, str. 11–39; Zabel, 2000, str. 261–264; Zabel, 2005, str. 6–19). V umetniških delih, kjer publika aktivno sodeluje oz. participira, kjer je publika del umetniškega procesa, ni več pomemben končni produkt, ampak so ta dela najbolj ohranjena v spominih ljudi, ki so sodelovali pri teh delih ali se umetnina dogaja v občutkih ljudi, ki sodelujejo pri teh delih. Taka dela obiskovalci dokončajo s svojo razlago ali pa z realnim delovanjem (Millet, 2004, str. 29–35). Govorimo o relacijski umetnosti (Bourriaud, 2007) oz. o participatornih praksah ali o socialno angažiranih umetniških praksah (Helguera, 2011), ki so se pojavile v devetdesetih letih prejšnjega stoletja. Sodobni umetniki tudi govorijo o tem, da hočejo s svojo umetnostjo spremeniti pogled ljudi na določen problem. Svetovno znani performer Ulay – Uve Laysipen, ki se zadnjih pet

let intenzivno ukvarja z vodo in je leta 2012 s svojim umetniškim delom sodeloval v Mariboru pri projektu *Evropska prestolnica kulture*, je zapisal: »Moja želja je, da bi podal drugačno idejo, podobo vode. Gre za to, da bi se ljudje zamislili in drugače vrednotili vodo, da bi se sploh počutili povezane z njo« (Pungerčič, 2012). Šejla Kamerić, ki je že večkrat razstavljala v Sloveniji, je v zvezi s svojim mednarodno priznanim delom, ki bo še omenjeno, zapisala: »Moj cilj ni bil, da se najde nesrečnik, ki je tako neumnost pisal po zidu, temveč da se usmeri pozornost na odgovornost tistih, ki pošljejo popolnoma nedorasle ljudi na konfliktna območja reševat življenja« (Megla, 2012). Sašo Sedlaček je v zvezi s svojim projektom *Infokalipsa zdaj!,* pri katerem je opozarjal na razprodajo javnega frekvenčnega spektra, izjavil: »Ravno pred kratkim smo v parlamentu izvedli akcijo z naslovom Manifest, da poslance poučimo o pravilih lepega vedenja« (Tratnik, 2009, str. 17).[3]

Zaradi svoje pluralnosti sodobna umetnost nudi različna razumevanja in s tem daje zgled za strpnost, spoštovanje in kritično mišljenje. Današnji umetniki so raziskovalci življenja v začetku 21. stoletja in odgovarjajo na različne fenomene vsakdanjega življenja. Fokusirajo se na aktualne socialne, politične ali ekonomske teme, kot so trajnostni razvoj, globalizacija, migracija ali kulturne izmenjave, medtem ko drugi zastavljajo bolj intimna vprašanja o človeških odnosih, spominu, življenju in smrti. Vse to pa so vprašanja, ki zadevajo koncept državljanske vzgoje. Veliko aktualnih problemov, ki zadevajo družbo, pa v učnih načrtih ni zajetih in tudi množični mediji ne poročajo o njih. Če vzamemo za primer diskriminacijo, za katero je Miheljeva pokazala (Mihelj, 2003, str. 20), da se pri predmetu zgodovina v osnovni šoli o njej sicer govori, a le ob zgledu fašizma in nacizma »okupatorjev«, ne pa o tem, kaj se dogaja zdaj, v času v katerem trenutno živimo. Dobre razmisleke o diskriminaciji tukaj in zdaj pa daje sodobna umetnost, kot bomo videli v nadaljevanju. Sodobna umetnost se namreč odziva na aktualne probleme prej, kot pridejo v širšo zavest. Zato nam sodobna umetnost pomaga razumeti sedanjost, v kateri živimo, ponuja nam uvid v družbeni ustroj, v katerem živimo, in nas spodbuja, da ga sooblikujemo. Te participatorne prakse, pri katerih umetnik sam oblikuje posebne skupnosti, gledalec pa sodeluje pri produkciji umetnine in se umetnina dogaja v njem, v njegovih občutkih, ki jih doživlja ob tem, ko sodeluje, so pravzaprav prvoosebna izkušnja, ki nas pripravlja na to, da lahko razmišljamo o določenem pojavu, ravnanju, stvari, oziroma nas, če participiramo, prisili, da ob nekem dogodku doživljamo občutke, ki so za nas lahko celo travmatični in ki jih lahko kasneje predelamo sami s sabo ali v razgovoru z drugimi. Sodobne participatorne prakse nam tudi ponujajo, da neko dejanje, ki je moralno sporno, izvršimo na simbolični ravni in to dejanje pripravlja

3 Sašo Sedlaček je bil kot umetnik tudi že angažiran v pedagoškem procesu (Kulturni bazar 2012: Program strokovnega usposabljanja, 2012).

teren za razmišljanje. Tako smo na primer leta 2000 v Koldingu in leta 2006 v Dornbirnu lahko v kuhinjskem mešalniku zmleli zlato ribico (Žerovc, 2011a, str. 108). Preden smo se lotili tega dejanja, smo morali temeljito razmisliti, ali bomo to storili ali ne in zakaj – razmišljali smo o našem ambivalentnem odnosu do živali. Torej je participatorna praksa že sama po sebi edukativna, saj je zelo podobna pedagoški metodi igre vlog in simulaciji konkretnih življenjskih primerov, ki so priporočljive pri edukaciji za demokratično državljanstvo (Židan, 2004, str. 51, 52; UN DDE, 2011, str. 20). Pri tem pa je treba poudariti, da pri participaciji v sodobni umetnosti ne gre za narejeno, simulirano igro, ampak gre za avtentično, pravo igro vlog, ki je gotovo bolj prepričljiva in učinkovita, kot če le gledaš podobo. V sodobnem svetu morda ni več dovolj, da se ob neki moralno edukacijski podobi pogovarjamo. Te participativne prakse skoraj nikoli niso individualne in so kolektivne, kar že samo po sebi nagovarja udeležence, da po dogodku izmenjujejo občutke in mnenja.

Ker še nimamo metodologije za vrednotenje sodobne umetnosti (Millet, 2004, str. 66), si pri njenem razumevanju oz. pedagoški interpretaciji lahko morda še najbolje pomagamo s poststrukturalističnimi metodami, v katerih se prepletajo različne vede in stroke in ki nam približujejo tudi vprašanja o nas samih (Larcher in Hooper-Greenhill citirano v Tavčar, 2001, str. 26). Torej ob teh pogovorih ne spoznavajo le umetnine, ampak tudi sebe in drug drugega, gojijo razumevanje do stališč in mnenj svojih vrstnikov, kar je tudi cilj državljanske vzgoje. Ko se učenci pogovarjajo o sodobni umetnosti, se pogovarjajo tudi o kontekstu, v katerem je umetnina nastala, o ideji, ki jo nosi umetnina, in o tem, zakaj je nastala, torej o svetu, v katerem živijo in si tako širijo horizont, se sprašujejo in diskutirajo o sodobnih problemih, ki jih imajo sami. Prepoznavajo probleme sodobne družbe, kar je tudi eden izmed ciljev državljanske vzgoje.

V nadaljevanju poglejmo, kakšni so ti cilji. DDA je obvezen predmet v 7. in 8. razredu. Analizirala bom cilje tega predmeta in ugotavljala povezljivost z vsebinami, ki jih tematizira sodobna umetnosti. Zato bom cilje primerjala s cilji LV za tretjo triado.

(Ne)povezljivost učnega načrta za likovno vzgojo z učnim načrtom državljanska in domovinska vzgoja ter etika

Vsebine sodobnih umetniških praks, ki sem jih navedla zgoraj, se lahko povezujejo z vsemi splošnimi cilji DDE (razvoj politične pismenosti, razvoj kritičnega mišljenja in nekaterih stališč in vrednost ter dejavno vključevanje učencev v družbeno življenje), saj k razvoju le teh prispeva na primer:

- razprava o sobivanju različnih ljudi in družbenih skupin,

- spremljanje aktualnih družbenih, političnih, ekonomskih in ekoloških vprašanj,
- razprava o etičnih načelih,
- prepoznavanje kršitev človekovih ali otrokovih pravic

in še bi lahko naštevali (UN DDE, 2011). Vsebine sodobnih umetniških praks se najbolj povezujejo z naslednjimi operativnimi cilji za 7. razred:

- razumejo, kako pomembna je za skupnost medsebojna strpnost njenih članov,
- razumejo, kako nastajajo predstave o drugih in drugačnih. V medijskih sporočilih in v vsakdanjem življenju spoznajo stereotipe in predsodke ter razvijajo kritičen odnos do njih. Spoznavajo pomen strpnosti in medsebojnega spoštovanja za kulturno sobivanja,
- razvijajo sposobnost za izražanje stališč

in z vsemi cilji vsebinskega sklopa Slovenija je utemeljena na človekovih pravicah. V učnem načrtu za 8. razred se operativni cilji na vsebine sodobnih likovnih praks vežejo z vsebinskim sklopom Finance, delo in gospodarstvo ter z vsemi cilji v vsebinskem sklopu Svetovna skupnost.

Sodobna umetnost v učnem načrtu LV ni zajeta, saj je učni načrt strukturiran na oblikovalski področji, na katerih se učenci učijo likovno izražati. To sta oblikovanje na ploskvi in oblikovanje v tridimenzionalnem prostoru. Tako na primer niso zajeti izrazni mediji, ki jih uporablja sodobna likovna umetnost niti sodobna umetnost kot taka, saj učni načrt ne vsebuje nobenih umetnostnih obdobij ali slogov. Na neprisotnost sodobne umetnosti in sodobnih izraznih medijev v učnem načrtu že skoraj petnajst let opozarja predvsem T. Zupančič (prej Vrlič) (Vrlič, 1998, 2000, 2001; Vrlič & Čagran, 2003; Zupančič, 2008; Duh & Zupančič, 2009), vendar je problem učnega načrta njegova neustrezna konceptualna struktura (Bračun Sova & Kemperl, 2012). V objavljenih raziskavah in primerih dobrih praks tako T. Zupančič in M. Duh učencem pokažeta tudi dela sodobnih umetnikov. Pri izbiri umetniških del nista povsem dosledna, saj se med njimi pojavljajo tudi dela tipičnih modernistov, na primer Pieta Mondriana (Duh & Zupančič, 2009; Duh & Herzog, 2012, str. 25), največkrat izbereta dela tujih umetnikov (dela pokažeta na reprodukcijah), ki jih v naših galerijah in muzejih ni moč videti.[4] Ko Duh zapiše, da je treba pri izbiri umetnine upoštevati načelo kakovosti (Duh, 2008, str. 103; Duh & Zupančič, 2009; Duh & Herzog, 2011, str. 21, 22), nehote pomislimo, da umetnine slovenskih umetnikov in umetnine, ki jih predstavljajo slovenske galerije, morda niso dovolj kakovostne.

Med splošnimi cilji UN LV (Učni načrt LV, 2011) lahko najdemo le en cilj, ki bi ga lahko uresničevali s spoznavanjem sodobnih likovnih praks, in

4 Izjema je Zupančičeva raziskava, objavljena leta 2001 (Vrlič, 2001).

sicer, da »učenci razvijajo občutljivost do likovne kulturne dediščine in kulturne različnosti«. A pravzaprav sodobne likovne prakse sem ne sodijo, saj še niso dediščina. Med operativnimi cilji za tretjo triado pa najdemo:

- ob likovnih delih, likovnih izdelkih učencev ter zgledih iz narave in okolja spoznavajo likovne pojme, povezane z oblikovanjem na ploskvi,
- razvijajo sposobnost analiziranja in vrednotenja likovnih del,
- spoznajo likovna dela nacionalne in mednarodne likovne kulturne dediščine,
- ob likovnih delih, likovnih izdelkih učencev ter zgledih iz narave in okolja spoznavajo likovne pojme, povezane z oblikovanjem v prostoru,
- spoznajo pomembna likovno umetniška dela iz različnih oblikovalskih področij, ki pripadajo domači in svetovni kulturni dediščini.

V tretji in peti cilj spet ne moremo vpeti sodobnih likovnih praks, saj te, kot že rečeno, niso dediščina. Prvi in četrti cilj bi se lahko navezoval tudi na sodobno umetnost, a pri tem cilju se spoznava le likovne pojme, kot na primer kompozicija, nasičena barva, barvna skladnost, zračna perspektiva, horizont, prostorski plani, kiparstvo v arhitekturi, masivna in skeletna gradnja, komponiranje z dodajanjem. Pri sodobni umetnosti pa je bolj kot forma pomembna vsebina, ideja, koncept. Torej bi spoznavanje in razumevanje sodobne umetnosti lahko umestili le v drugi cilj. Zanimivo, da je med cilji prve triade navedeno tudi, da učenci ob obisku likovnih razstav pridobivajo odprtost do najrazličnejših načinov likovnega ustvarjanja, med cilji druge in tretje triade pa tega cilja ni več. Obisk galerij se ponovno pojavi šele v poglavju Didaktična priporočila. Na začetku tega poglavja je namreč zapisano: »Učitelj pri likovni vzgoji učence ves čas tudi kulturno vzgaja. Na smiseln način v posamezne korake učnega procesa vključuje primere likovnih del, reprodukcij ali originalov likovnih stvaritev. Za poglobljeno spoznavanje umetniških stvaritev učitelj vsaj enkrat na leto učence pelje na ogled razstave v galerijo ali v muzej, organizira pogovor z umetnikom (tudi v ateljeju) ipd.« V nadaljevanju so didaktična priporočila ločena po triadah, a za tretjo triado obisk galerij in spoznavanje umetnin ni več omenjeno. Na kakšen način je pravzaprav mišljeno spoznavanje umetnin, pa izvemo iz didaktičnega priporočila za prvo triado: »Smiselno in ustvarjalno jih vgrajuje v posamezne faze učnega procesa kot ponazorilo (učilo) za nazorno spoznavanje likovnih pojmov, spoznavanje posebnosti likovne tehnike ali motiva.« Tu se ponovno pokaže konceptualni problem zasnove učnega načrta (Bračun Sova & Kemperl, 2012). Prav tako razumevanja umetnin ne najdemo pri preverjanju in ocenjevanju znanja, kar je mogoče pripisati dejstvu, da se sme pri likovni vzgoji ocenjevati le likovne izdelke. Sicer bi tudi skozi učenčev likovni izdelek lahko

ocenili standard znanja »pojasni pomen kulturne dediščine za slovenski in svetovni prostor«, a pri tem ni jasno, ali to pomeni tudi razumevanje umetnosti in zakaj je v ta UN vključena kar vsa kulturna dediščina in ne le umetnostna.

Analiza pokaže, da se lahko upravičeno vprašamo, ali učenci pri likovni vzgoji v tretji triadi sploh pridejo v stik s sodobnimi likovnimi praksami, če pa pridejo v stik, je vprašanje, na kakšen način jih obravnavajo. S tem pridemo do problema medpredmetnega povezovanja.

UN DDE je z napotki za medpredmetno povezovanje zelo skop, poudarja le, naj bosta kulturna vzgoja in vzgoja za trajnostni razvoj osrednji sestavini predmetnega in medpredmetnega pristopa poučevanja. Prav tako UN LV ne konkretizira vsebin in predmetov, s katerimi je možno povezovanje. Pri opredelitvi predmeta sta sicer kot dve izmed petih ključnih poti za doseganje nalog predmeta likovna vzgoja izpostavljeni »navezovanje problemsko zasnovanih nalog na likovno umetnost in vizualno kulturo« ter »povezava z drugimi predmetnimi področji in z vsakdanjim življenjem«. Sicer pa se povezovanje priporoča na ravni likovnih pojmov: »1. Povezovanje likovnih pojmov s pojmi vsebin iz drugih predmetnih področij, ki temeljijo na besedni, ustni ali pisni interpretaciji. 2. Povezovanje likovnih pojmov s pojmi drugih predmetnih področij, ki temelji na likovni interpretaciji – likovnem izražanju. Načrtovane naloge se izvedejo likovno.« Zapis temelji na strokovnem članku T. Tacol (2002), ki predlaga ta dva načina. Pri razlagi drugega načina pravi, da je izpostavljeni likovni problem v likovni nalogi lahko likovni motiv. To ponazori z motivom konja, pri čemer pa je treba likovno nalogo vseeno povezati z likovnim pojmom, na primer pika, črta, nemešane barve, mešane barve itd. Zapiše tudi, da »medpredmetno povezovanje v smislu samo povzemanja motiva iz vsebin, spoznanih pri drugem predmetnem področju, in realizacija tega motiva v izbrani likovni tehniki, ni sprejemljivo« (prav tam, str. 46). V vsakem primeru mora biti torej medpredmetno povezovanje na strani likovne vzgoje povezano z likovnim pojmom, ki je likovno teoretski in v konceptu modernističen, kaže pa se v likovnem izdelku.

Iz analize izhaja, da se ciljev, kot so razvijanje sposobnosti analiziranja in vrednotenja likovnih del ali spoznavanje likovnih del nacionalne in mednarodne likovne kulturne dediščine, sploh ne povezuje, saj jih predlagano medpredmetno povezovanje sploh ne predvideva.

Morda je to razlog, da se pri dnevih dejavnosti v osnovnih šolah tako redko pojavljajo likovne dejavnosti (tako na perceptivni kot na produktivni ravni), kot to ugotavljata M. Duh in J. Herzog (2012). Najverjetneje je tudi zato objavljenih idej, kako povezovati likovno vzgojo z državljansko vzgojo, tako malo, pa še te, ki obstajajo, so vezane le na eno temo, in sicer na okoljevarstvo,

znotraj tega večinoma na problematiko odpadne embalaže, glavni dokaz za ponotranjanje ekološke problematike pa je likovni izdelek učenca (Zupančič, 2009; Duh & Herzog, 2011; Duh & Herzog, 2012).[5] Ustvarjanje iz odpadnih materialov pravzaprav tudi ne kaže na srž problema odpadkov, ampak predvsem podpira ideologijo recikliranja. Velikokrat namreč odpadke reciklirajo ista podjetja, ki odpadke zavestno proizvajajo, s tem pa si ustvarjajo le še večji dobiček. Velika evropska in ameriška podjetja strupene odpadke izvažajo v afriške države, kjer ljudje zaradi tega celo umirajo, kot to kažejo tudi Greenpeaceove raziskave (Omladič, 2011, str. 12–14).

Bolj poglobljeno s stališča okoljevarstva se je raziskave o likovni vzgoji in ekologiji lotil B. Flajšman (2009), ki je skušal uravnotežiti razmerje med sporočilnostjo in likovno-formalnimi pojmi. V raziskavi je učencem pokazal 10 likovnih del z ekološko sporočilnostjo, ob katerih so morali učenci sami napisati, kaj dela predstavljajo in sporočajo. Zanimivo je, da je bilo med temi deli kar osem plakatov oz. razglednic, ki imajo precej jasno sporočilnost, saj je to ena glavnih zahtev dobrega plakata. Le dve izmed desetih del sta bili umetniški deli, ki sta bili prikazani na reprodukcijah, oba avtorja pa sta Američana. Zanimivo je tudi, da se je avtor odločil raziskavo delati v 9. razredu, saj v okviru medpredmetnega povezovanja teh tem ni mogel povezati s predmetom Državljanska vzgoja in etika. V tistem času je bila okoljska problematika pri tem predmetu umeščena v 8. razred (Učni načrt Državljanska vzgoja in etika, str. 32).

Zelo zanimivo je, da nihče od omenjenih avtorjev učencev ni seznanil z umetniškimi deli slovenske skupine OHO, katere člani so se prvi v našem prostoru začeli ukvarjati z okoljevarstvenimi vprašanji. Ti so v času prehajanja v tretjo fazo (leta 1969) izvajali landart projekte, a veliko manj invazivne kot njihovi ameriški kolegi ter že vnaprej namenjene temu, da jih čas hitro zabriše (Kočevar, 2009, str. 150). Ekološka vprašanja so bila glavna tema tudi kasnejšega samostojnega delovanja Marka Pogačnika v Šempasu (Ravnikar, 2009, str. 32), svetovno priznane slovenske umetnice Marjetice Potrč (Ravnikar, 2009, str. 32; Vovk, 2009, str. 70–76), Sašo Sedlaček, eden najpomembnejših slovenskih sodobnih umetnikov, ki je že bil in bo še omenjen, pa se prav tako že več kot deset let ukvarja prav z okoljevarstvenimi problemi, zlasti odpadki in recikliranjem (Grafenauer, 2011). Za vse tri bi zelo težko zapisali, da niso dovolj kakovostni (če vzamemo Duhovo merilo izbire), saj je imel Marko Pogačnik leta 2012 v Moderni galeriji v Ljubljani obsežno retrospektivno razstavo z naslovom *Umetnost življenja – življenje umetnosti*, v času pisanja tega prispevka pa je na temo zdravljenja zemlje z litopunkturo predaval na sedežu Unesca v Parizu (M. K., 2012). Marjetica Potrč se je leta 2011 uvrstila na prestižno tretje mesto na lestvici

5 Pri tem je spet treba opozoriti na nedoslednost pri izbiti umetnikov.

desetih najpomembnejših sodobnih umetnikov na svetu, ki jo objavi ameriški tednik Newsweek. Pri utemeljitvi so poudarili prav njeno socialno angažirano umetnost v favelah južne Amerike.[6] Sašo Sedlaček je prejemnik več domačih in tujih nagrad, med njimi je leta 2006 prejel slovensko nagrado OHO, leta 2012 pa je bil nominiran za Henkel Art.Award., nagrado za umetnike iz Srednje in Vzhodne Evrope (T. C., 2012). Leta 2011 je imel samostojno pregledno razstavo v **Koroški galeriji likovnih umetnosti v Slovenj Gradcu, ki se je leta 2012 ponovila še v Jakopičevi galeriji v Ljubljani.**

Trije primeri: *proletarier aller länder*, žicar, *eu/others*

Za ponazoritev možnega povezovanja sodobnih likovnih praks in državljanske vzgoje vzemimo le en splošni cilj učnega načrta DDE, in sicer presoja stereotipnih predstav o drugih in drugačnih. Pri izbiri cilja sem izhajala tudi iz ugotovitve raziskovalcev v projektu *Primerjalna raziskava državljanskega izobraževanja in vzgoje – cep* (raziskava, ki je potekala leta 1999, je zajela učence iz 28 držav), ki pravi, da imajo slovenski učenci do priseljencev pomembno manj naklonjen odnos, kar po mnenju raziskovalcev vzbuja skrb in terja nadaljnje analize (Pedagoški inštitut, 2002).[7]

Umetnost je v preteklosti lahko tudi sama generirala predsodke. Tako na primer ob reliefni upodobitvi timpanona portala cerkve sv. Magdalene v Vézelayu iz leta 1130 lahko razmišljamo in se pogovarjamo o diskriminaciji oz. odnosu do drugega. Upodobitev kaže Kristusa, ki naroča apostolom, naj širijo krščansko vero po vsem svetu. Na prekladi portala so upodobljeni tisti ljudje, ki misije širjenja vere še niso sprejeli in so upodobljeni kot »polljudje« – nekateri imajo prašičje rilce, drugi slonja ušesa, spet tretji so pritlikavci. Gre torej za utrditev podobe o nevernikih v času križarskih pohodov, pri katerih je cerkev imela pomembno vlogo.

A veliko sodobnih umetnikov se tega problema loteva na drugačen način, saj se ukvarjajo s tem, kako stereotipne predstave o drugih spremeniti. Za ponazoritev bom med njimi izbrala le tri umetnike, njihove umetnine oz. umetniške dogodke, ki smo jih v Ljubljani lahko videli v zadnjem desetletju. Izhajam namreč iz prepričanja, da je stik z originalnimi umetniškimi deli ključnega pomena za vse, ki proučujejo, razmišljajo ali se ukvarjajo in ustvarjajo

6 Umetnica je med drugim sodelovala na Beneškem bienalu, bienalu v San Paulu in na razstavi Skulptur-Projekte v Münstru. Leta 2000 je dobila prestižno mednarodno nagrado za sodobno umetnost, nagrado Hugo Boss, ki je vključevala tudi osebno razstavo v Guggenheimovem muzeju v New Yorku (Gopnik, 2011).

7 V drugi mednarodno primerjalni študiji, ki je bila opravljena deset let kasneje (2009), sicer slovenski učenci niso več odstopali v negativni smeri in so se uvrstili v mednarodno povprečje (Šimenc, 2012, str. 96).

umetnost (Charman, Rose, & Wilson, 2006; Talboys, 2010). To prav gotovo še toliko bolj velja za participatorne likovne prakse, saj se umetnina, kot sem že napisala, dogaja v nas in umetniškega dogodka preko reprodukcije sploh ne moremo doživeti. Ob umetninah, ki so sicer večpomenske in mnogoplastne, bom izpostavila le tisti del vsebine, ki je povezan z omenjenim splošnim ciljem.

Jeseni leta 2011 smo na 29. ljubljanskem grafičnem bienalu, ki je bil posvečen umetniškemu dogodku, lahko participirali pri umetnini umetnika turškega rodu, Serkana Őzkaya, ki živi in dela v New Yorku in Istanbulu. V instalaciji z naslovom *Proletarier aller Länder* (Proletarci vseh dežel) so bili na tla galerije prilepljeni tisoči majhnih figur delavcev iz rdeče plastične pene z značilno delavsko dvignjeno roko, stisnjeno v pest (Žerovc, 2011b, str. 142, 143). Figurice so bile po prostoru razporejene tako na gosto, da se obiskovalec ni mogel izogniti stopanju po figuricah, če je hotel napredovati v naslednjo dvorano galerije. Obiskovalec se je tako po delavskem razredu sprehodil nalahno, ali pa je dolgo skakal po njem, saj so se prilepljene figurice iz prožne pene vsakokrat postavile nazaj na noge. A ob koncu razstave so nekateri delavci le »klonili« pod težo tistih, ki so jih tlačili k tlom. Ta postavitev je nekatere obiskovalce tako pretresla, da se niti niso odločili, da bi stopili v naslednjo dvorano, ker jim je bilo tudi na simbolni ravni preveč težko tlačiti delavca. Drugi so po figuricah stopali nalahno, kot bi stopali bosi po steklu, nekateri pa so prav uživali v skakanju. Umetnik nas je tako na sicer precej duhovit način napeljal na možnost, da razmišljamo o problematiki sodobnega proletariata in njihovega mesta v družbi.

Drugo umetniško delo je Žicar Saša Sedlačka, ki se je leta 2006 sprehajal po ljubljanskem City parku, po ulicah Tokia in Tajpeja, leto kasneje so ga uporabljali ljubljanski brezdomci, lani pa smo ga lahko videli na retrospektivni razstavi v Ljubljani. Glavne teme Saša Sedlačka, ki velja za eno osrednjih imen sodobne umetnosti na Slovenskem, so odpadki, recikliranje in odnos do drugega v globaliziranem svetu. Na probleme sodobne družbe ne le opozarja, ampak ponuja tudi (umetniške) rešitve. Za Žicarja je prejel več nagrad v tujini, pa tudi slovensko nagrado OHO (Tratnik, 2009; Grafenauer, 2011). Žicar je robot, sestavljen iz odpadne računalniške tehnologije. Leta 2006 je v polomljeni slovenščini v City parku, kjer socialno ogroženim sicer ni dovoljeno prosjačiti, mimoidoče prosil za denar. Robot je bil pri zbiranju denarja zelo uspešen, saj je na uro zbral več kot 1.000 takratnih slovenskih tolarjev. Projekt je pokazal, da veliko raje kot v človeško dlan damo v integrirana vezja, robotu smo plačali za zabavo, užitek, ki nam ga ponuja njegova tehnologizirana človeškost. Žicar je bil posebej privlačen za mamice z majhnimi otroki, ki pa se po navadi klošarjem izogibajo. Podobna je bila reakcija prebivalcev Tajpeja. Tam je bil Žicar, ki je kmalu pritegnil pozornost mnogih mimoidočih, postavljen poleg berača, ki

je ostal osamljen. Po prihodu policista je moral berač oditi, robot pa je lahko ostal (Grafenauer, 2011, str. 30–33).

V okviru mednarodnega bienala za sodobno umetnost *Manifesta*, ki se je leta 2000 odvijal v Ljubljani pod naslovom *Borderline sindrom*, je Šejla Kamerić izvedla instalacijo *EU/Others***.** Rojena Sarajevčanka je mednarodno prepoznavna postala z delom iz leta 2003, ki prikazuje Kamerićevo sámo, ko gleda gledalca, preko njene podobe pa je reproduciran grafit, ki ga je mirovni vojak Združenih narodov napisal v Srebrenici na steno kasarne, s čimer je hotela opozoriti na predsodke do drugih ljudi in potrebo, da se jih osvobodimo. V Ljubljani je na Tromostovju dala namestiti napise, ki se bili v tistem obdobju sestavni del mej evropske unije: *EU citizens* in *Others*. Danes za *Others* uporabljamo bolj korekten napis *Non european citizens*. Takrat pa je bil za umetnico, kot sama pravi, to popoln šok, saj je kot državljanka Bosne in Hercegovine takrat brez vizuma lahko potovala le v peščico držav. To je pri njej sprožilo vprašanje identitete, kdo so ti »drugi« in kaj kot »druga« počne na evropskem bienalu sodobne umetnosti v Ljubljani. V času instalacije smo namreč tudi državljani Slovenije na evropskih mejah imeli status »drugih« (Kamerić, 2000).

Že samo ti trije primeri potrjujejo Vigotskijevo tezo, da »nova« umetnost daje ogromno priložnosti za »novega« človeka. Povedano drugače z vidika današnjih okoliščin: sodobna umetnost nam lahko kaže pot naprej, pot iz krize (okoljske, medosebne, krize vrednot itd.). Sodobno umetnost je treba le spremljati, jo razumeti in doživljati.

Zaključek

Če se bo koncept aktivnega državljanstva v prihodnosti prilagajal globaliziranemu in multikulturnemu svetu, če se bo ukvarjal z ekonomsko, politično in socialno neenakostjo ne le znotraj nacionalne države, ampak med državami, pri čemer bodo eden izmed etičnih temeljev univerzalne človekove pravice, to se pravi vzgoja za globalno državljanstvo (Židan, 2007, str. 14; Demaine, 2010; Davies & Evans Ried, 2010, str. 217), potem bo poznavanje, razumevanje in doživljanje sodobne umetnosti še kako aktualno oz. potrebno. Analiza je pokazala, da preko spoznavanja vsebin sodobne umetnosti lahko uresničujemo cilje aktivnega državljanstva. Namreč edino sodobna umetnost res prepoznava in opozarja na res aktualne probleme, na probleme, o katerih množični mediji ne poročajo. Probleme prepoznavajo, ko so šele v nastajanju in že predvidevajo posledice. Sedlačkova akcija *Just do it!*, v kateri je leta 2003 zazidal vhod v ljubljanski City park z zidaki, narejenimi iz reklamnih oglasov, pri čemer je tematiziral tako potrošništvo kot odpadke in reciklažo, je nastala, ko je bila Slovenija na

višku potrošništva in smo bili večinoma še vsi navdušeni nad obilnim reklamnim materialom, s katerim so trgovci zasipavali naše nabiralnike (Grafenauer, 2011, str. 24–26). Šejla Kamerić je s svojo že omenjeno podobo *Bosansko dekle* polepila stene Sarajeva precej prej, preden je mednarodna skupnost prepoznala, da se je v Srebrenici zgodil genocid nad Bošnjaki (Megla, 2012, str. 24, 25)

Integriranje sodobne umetnosti v kurikulum – tako zasnovani kurikulum, kot je zdaj – se zdi problematično, saj moramo sodobno umetnost doživljati tukaj in zdaj, če hočemo, da bo imela željen učinek. Uvajanje sodobne umetnosti v aktualni kurikulum namreč nujno vodi v to, da sodobna umetnost zaradi časovne distance izgubi svojo aktualnost. Potreben je torej drugačen koncept kurikuluma, na kar je že bilo opozorjeno (Bračun Sova & Kemperl, 2012).

Zelo pomembno je, da imajo učenci čim več avtentičnega stika s sodobno umetnostjo in da pri tem pedagogi uporabljajo sodobne metode za doživljanje in razumevanje umetnin. Sodobna umetnost se namreč težje kot starejša umetnost poučuje v razredu, saj se umetniškega dogodka, v katerem aktivno participiraš, ne da doživeti na reprodukciji. Zato bi moralo biti v učnem načrtu veliko bolj poudarjeno obiskovanje galerij, muzejev in drugih prostorov, kjer se prezentira sodobna umetnost in odvijajo umetniški dogodki in kjer se bodo učenci lahko na avtentičen način učili aktivnega državljanstva. S tem bi pridobila oba predmeta, tako likovna vzgoja kot državljanska in domovinska vzgoja ter etika. Za to pa bi bilo treba spremeniti koncept medpredmetnega povezovanja likovne vzgoje z drugimi predmeti.

Podlago za pogostejši neposreden stik s sodobno umetnostjo najdemo v *Beli knjigi*, kjer je zapisano načelo sodelovanja šole z okoljem, torej se sodelovanje šole z muzeji in galerijami predvideva eksplicitno (Bela knjiga, 2011, str. 114–117). Z vidika medinstitucionalnega povezovanja pa se zastavlja vprašanje usposobljenosti likovnih pedagogov na eni in muzejskih pedagogov na drugi strani. Tu bi pričakovali, da se bodo galerije in muzeji, ki predstavljajo sodobno umetnost, bolj potrudili k privabljanju šolskih skupin, za učitelje pripravili gradiva o umetninah, umetnikih in s šolskimi kurikulumi povezanih vsebinah ter učitelje vpeljevali v nove in drugačne metode dela, ki spodbujajo interdisciplinarnost. Poleg umetnika namreč le kustos, ki pripravlja razstavo, najbolje pozna umetniško delo, ki se dogaja tukaj in zdaj, saj umetniki še niso valorizirani in zato tudi še ni virov, s katerimi bi si učitelj pomagal, prav tako še ni dostopnih reprodukcij. A kustosi sodobne umetnosti se pri nas te pedagoške vloge premalo zavedajo.

Odgovornost osnovnošolske edukacije pa bi morala biti tudi, da opremi otroke z orodji, s katerim bodo presojali in se spopadali z vizualnimi podobami, ki jih je v svetu precej več, kot kdaj koli prej (Knight, 2010, str. 238).

Zato moramo razmisliti, ali želimo, da nam otroke vzgajajo produkti popularne kulture hollywoodske provenience, ki še vedno podpirajo ideologijo prevlade belega moškega (na primer družinski film Marmaduke iz leta 2010 in drugi Disney produkti, ki jih analizirata Dorfman in Mattelart (2007)), ali pa bi se o aktualnih družbenih problemih in o svetu, v katerem živimo, z njimi raje pogovarjali ob sodobni umetnosti in s tem skušali spremeniti stereotipne predstave tako o drugih kot o nas. V tem pogledu je, kot je pred desetletjem za angleško edukacijo ugotavljal Pike (2002), potencial umetnosti tudi pri nas še povsem neizkoriščen.

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Devetak, I. (2012). Providing High Quality Science Knowledge Using Submicrorepresentations [Zagotavljanje kakovostnega znanja naravoslovja s pomočjo submikroreprezentacij]. Ljubljana: University of Ljubljana, Faculty of Education. 114 p., ISBN 978-961-253-076-1.

Reviewed by Jasmina Kolbl[1]

»Schools should educate scientifically literate citizens, since they can contribute to the development of society in the technological field, because a technologically developed society enables sustainable development and greater prosperity.« (Devetak, p. 5)

Understanding of concepts cannot be transmitted from a teacher to the students. To put it another way, understanding is not a commodity that can be transferred. Instead, each learner must create his or her own understanding of specific concepts. Teachers can support the development of students' understanding, but they cannot give them knowledge. Information can be transmitted from one person to another, but understanding develops when a learner actively and mentally works to give meaning to experiences and ideas.

The quality of education and motivation for learning are becoming increasingly dependent on the quality of the visual aids used in the learning process. Specifically, numerous visualisation tools are readily available today, but only seldom has their impact on students' understanding of chemistry or their motivation for learning chemistry been evaluated. With this in mind, we cannot be surprised by the growing number of scientific papers and journals dedicated to debating this issue from various standpoints. In an effort to apply this, Iztok Devetak's monograph could be read as an analysis of the key factors ensuring the quality of science knowledge in the educational system.

Providing High Quality Science Knowledge Using Submicrorepresentations includes contributions by authors from various backgrounds – theorists, practitioners, activists – enabling a discussion rooted in the perspectives of various levels and fields of engagement in chemistry education, especially the impact of sub-microrepresentations on learning, thus giving the book a specific value.

Iztok Devetak (an assistant professor for Chemical Education at the Faculty of Education, University of Ljubljana) has authored this monograph, intended

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primarily for science teachers who are part of the education system at the primary and secondary levels, graduate and post-graduate students of different science fields and science education, science teacher educators, science curriculum developers, science education researchers, science textbooks authors and editors and, last but not least, to the politicians who are responsible for the national educational system. However, it might be appealing to the exceptionally broad range of people who are involved in science education and engaged in improving it. For school administrators, supervisors, school board members and other stakeholders in the educational system, this monograph provides some solutions to the most significant problems in science teaching and learning regarding using submicrorepresentations in the science classroom.

Examining the structure of the monograph, it is obvious that the author did not overlook the importance of good book structure. The text is divided into segments presented a logical sequence, enabling the reader to find the information he or she is looking for. Where necessary, essential items are highlighted.

In addition to the forward at the beginning and summary at the end, this book has six chapters and concludes with references and an index. Each chapter concludes with a summary of the problem described or suggestions for further reading on a topic.

Chapter 1, entitled *Triple Nature of Science Concepts*, explores all three levels of chemical concept presentations that are crucial in chemistry teaching and learning: (a) the macro- or tangible (what can be seen, touched or smelt); (b) the submicro- (atoms, molecules, ions and structures); and (c) the symbolic (symbols, formulae, equations) levels. Johnston was the first to integrate the three levels in i.e. »chemistry triangle« (p. 9). The following is an overview of the historical development and upgrading of this model until Devetaks' Interdependence of Three Levels of Science concepts representations (ITLS) model is introduced (p. 10). An ITLS model demonstrates the connections of the three levels of chemical concepts, supported by different visualisation tools for developing students' adequate mental model of the science phenomena observed.

Chapter 2, entitled *Science Teaching and Learning*, presents a model of teaching and learning chemistry, reflecting the complexity of the subject and the slightly modified ITLS model presented in Chapter 1. It is crucial that the teacher integrate the triple nature of chemical concepts through a variety of educational material and teaching approaches.

Chapter 3, entitled *Visualisation and Learning*, describes the theoretical basis of visualisation in science learning, as developed by some respected researchers in the fields of science and chemistry education (e.g. Treagust,

Gilbert, Justi), supported by the learning theories developed by Meyer, Marzano, Bloom and others.

Chapter 4, entitled *Science Concepts Visualisation*, is the most extensive and important chapter in this monograph. It describes various ways of visualising abstract science concepts, such as analogies and metaphors, models and modelling, sub-microrepresentations, animations and simulations at the submicroscopic level of chemical concepts. The results of the study of students' understandings and chemical misconceptions identified by submicrorepresentations represent a particular value of the fourth chapter. Submicrorepresentations (SMRs) are a powerful tool for identifying misconceptions of chemical concepts. Research also shows that they can be also used for generating proper mental models of chemical phenomena in students' long-term memory. Detailed misconceptions of some specific chemical concepts, such as the structure of matter, chemical reactions, and solutions and electrolyte chemistry at the particulate level, are presented. In addition, the author also offers some explanations of the possible reasons that cause the previously described misconceptions (e.g. textbooks' pictorial material and teachers' educational strategies). Conclusions and suggestions for science teachers to avoid generating students' misconceptions at the sub-microlevel of chemical concepts are drawn directly from the research findings.

A discussion with teachers or a perceptive look into a science classroom is sufficient to aid in realising that the learning of scientific concepts is more than a cognitive process. Chapters 5 and 6, entitled *The Influence of Motivation on Science Learning* and *The Influence of Mental Abilities on Science Learning* answer some questions, for example: What is the motivation for science learning?, Do male and female students differ in motivation for learning science?, How do students' formal reasoning abilities affect the science knowledge?, How spatial abilities influence students' abstract chemical concepts understandings? and so on. Most chemists would probably agree that chemical experimentation is one of the crucial visualisation tools in chemistry teaching and learning at the macro level that motivates students. Maintaining a sufficiently high level of motivation or interest for the learning of submicro- and symbolic level of chemical concepts represents a considerable challenge for chemistry teachers at all levels of education. It is vital to realise that students' formal reasoning abilities influence their success in solving chemical problems, which include the submicrolevel of chemical concepts and that visualisation abilities also significantly influence students' academic achievements.

Readers might find the summary of main ideas presented in the last chapter useful; while some might feel that the author tends to repeat himself.

While these ideas have been rather thoroughly interpreted in previous chapters, it is useful to conclude the monograph by summarising some crucial points presented in the book. However, the author is well aware of the fact that is essential to introduce different visualisation abilities to illustrate abstract science/chemical concepts to the students at the beginning of the science education, thus also the application of SMRs.

Multiple groups of Slovenian readers have finally acquired a book that deals with the issue of the quality of science knowledge, especially from the importance of visualisation in science education. The reviewed monograph is well worth reading by anyone interested in better understanding the use of submicrorepresentations in the science/chemistry teaching.

On the basis of the research results that are reviewed in *Providing High Quality Science Knowledge Using Submicrorepresentations*, by Iztok Devetak, PhD., it is recommended that teachers should more frequently incorporate submicrorepresentations in their educational process when explaining macroscopic observations and before using symbolic chemical language at the elementary, secondary and tertiary levels.

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