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Networking for education for sustainable development in Austria: the Austrian ECOLOG-schools programme

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This case describes networking for education for sustainable development within the Austrian ECOLOG-schools network. The article presents theoretical concepts of networks in education in general, and the organization of the ECOLOG-network in particular. Based upon these foundations, the concept and results of a participatory evaluation study are described and reflected. The article closes with a summary of the evaluation process and with an outlook for the future development of the network. ECOLOG-schools have to deal with tensions between different interests and stakeholders within education for sustainable development and schooling. Spaces for exchange and reflection offered by the network support the ability to deal with these tensions constructively. The overall challenge of the network might be described as keeping momentum between structures and processes or, in other words, between stability and flow to enable the sustainable development of learning.

Keywords: networks in education; education for sustainable development; school development; participatory evaluation

Introduction

ECOLOG is based upon an action research approach: schools analyse the ecological, technical, and social conditions of their environment and, on the basis of these results, define objectives, targets, and/or concrete activities and quality criteria, to be implemented and evaluated. Students as well as all the other stakeholders of a school should be involved in a participatory way, and collaboration with authorities, businesses, and other interested parties is encouraged. The measures concern, among others, are such as saving resources (energy, water, etc.), reduction of emissions (i.e. waste, traffic), spatial arrangement (from the classroom to the campus), the culture of learning (communication, organizational structure), and health promotion as well as the opening of the school to the community. All in all, over 400 schools with about 90,000 students are currently part of the network. Many others are reached through the website, teacher in-service-training seminars, and newsletters (Rauch and Pfaffenwimmer 2014).

Given the uncertainty of what adequate action in complex situations like networking should be, and the general precariousness of conceptions such as education and sustainable development, there is a need to reflect on one’s actions. This helps

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to nurture an ability and readiness for the further development of one’s actions in response to the outcome of the reflection process. Competent, professional action in complex situations hence requires concomitant learning processes as a *sine qua non*. Inversely: professional learning requires the experience of acting in complex practical situations. From these perspectives, professional action and professional learning coincide in one stream of action. As professional learning happens in practical situations, which, in turn, are seen to require reflection and further development, knowledge and skill development go hand in hand with practical situational development (Altrichter and Posch 2009). Stern et al. (2014) have recently offered reflections on good action research. They argue that good action research pursues worthwhile practical purposes, connects theory with praxis, and is responsive and collaborative.

Within the ECOLOG-schools network the participants write annual reports based upon the methodology of action research. These reports are presented on the website of the network. Recently, the author, commissioned by the Ministry of Education and Women’s Affairs, conducted an evaluation of the schools that have been in the programme from the beginning. This was done in a participatory model involving the coordinator of the ECOLOG-schools network in the Ministry of Education as well as the schools involved. In the next chapter, the theoretical background and the organization of the ECOLOG-school network is described more deeply. Based upon these foundations, a participatory evaluation study is then described and reflected. The article closes with a summary of the evaluation study and with an outlook for the future development of the network.

**Theoretical background of networks in education**

In the early 1980s, the notion of ‘networks’ became very popular within society as a whole and within the scientific community in particular. Naisbitt (1984) talked about a ‘megatrend’ of transformation within and of hierarchies, arguing that informal networks of small groups become necessary in order to optimize organizational processes of problem-solving which can no longer be performed by hierarchical structures.

According to Castells’ (2000) notion, networks constitute a new social morphology in society, where dominant functions and processes are increasingly organized around networks. New information technologies provide the material basis for its pervasive expansion throughout the entire social structure. Castells (2000) conceptualizes his notion of ‘network’ as a highly dynamic, open system consisting of nodes and flows.

In the wake of these general social trends and this structural transformation, networks in educational contexts have also become increasingly attractive in educational systems. In the 1990s, systemic school modernization processes were launched by policy-makers, prompted by the need for reformatory change in the light of the results of international assessment (like the Third International Mathematics and Science Study [TIMSS] and Programme for International Student Assessment [PISA] studies). Having proclaimed ‘school autonomy’, the central administration in Austria has focused increasingly on contextual steering activities whilst delegating responsibilities to decentralized units (Fullan 2007; Posch and Altrichter 1993; Rauch and Scherz 2009). Less bureaucratic steering generates a need for alternative coordination. Intermediate structures (Czerwanski, Hameyer, and Rolff 2002) such as networks are expected and conceived to fill a structural gap and take over functions traditionally assigned to the hierarchy. Ideally, networks are
conceived as an interface and an effective means of pooling competencies and resources (OECD 2003; Posch 1995). As intermediate structures, they manage autonomy and interdependent structures and processes, and try to explore new paths in learning and cooperation between individuals and institutions (Rauch 2013).

In this process, authors consider the following aspects paramount:

- **Mutual intention and goals.** Networks orientate themselves on a framework topic and goal horizon that has been agreed upon by all (Lieberman and Wood 2003).
- **Trust orientation.** Mutual trust is a prerequisite for exchanging and sharing knowledge, and therefore a prerequisite for learning. Networks encourage new, innovative paths (risk-taking) and support conflict resolution (McDonald and Klein 2003; McLaughlin et al. 2008).
- **Voluntary participation.** Networks do not impose sanctions. Interventions can be vetoed (Boos, Exner, and Heitger 2000; McLaughlin et al. 2008).
- **Principle of exchange (win–win relationship).** Information can be exchanged whenever an occasion arises. Mutual give and take is vital. Power and competition, while not being excluded, are addressed and dealt with between the centre and the periphery on the same level (McCormick et al. 2011; OECD 2003).
- **Steering platform.** Networks are not occasional interactions, but institutionalized configurations. Networks have to be coordinated and maintained in order to support exchange processes, cooperation, and learning (Dobischat et al. 2006).
- **Synergy.** Networks enable synergies through structural organization; they offer an alternative to classic rationalization strategies and are characterized by the dismantling of structures (Schäffter 2006).
- **Learning.** Networks are support systems based on reciprocity. Those involved can exchange views and information, and cooperate on mutual concerns. They learn from and with each other (Czerwanski, Hameyer, and Rolff 2002; O’Hair and Veugelers 2005).

Per Dalin’s (1999) description of how networks function in education is an important theoretical basis underlying the formation of regional networks in ECOLOG.

Accordingly, networks have an informative function, which becomes visible in a direct exchange of practice and knowledge for teaching and schools, and as a bridge between practice and knowledge.

Through networking, further opportunities for learning and competence development (professionalization) are encouraged by the members who establish the learning function. Trust is a prerequisite for cooperation within a network. It is the basis for the psychological function of a network, which encourages and strengthens individuals. In a fourth function of networks, the political function, enforceability of educational concerns increases, following the motto ‘together we achieve more’.

**The Austrian ECOLOG-schools programme**

ECOLOG, a key action programme and network for the greening of schools and education for sustainability, was developed in 1996 by an Austrian team of teachers working on the international project Environment and School Initiatives (Posch 1999). In terms of education for sustainable development (ESD), the lines of
reasoning currently being pursued in Austria focus on the notion of sustainable development, on environmental education, and on development education (or global learning or global citizenship education) and international peace as well as civic education, which have sparked a debate on the nature of education in general (Rauch and Steiner 2006, 2013). As with human rights, sustainable development may be regarded as a regulatory idea (Kant [1787] 1956). Such ideas do not determine an object but serve as heuristic structures for reflection. They give direction to research and learning processes. In terms of sustainability, this implies that the contradictions, dilemmas, and conflicting goals inherent in this vision need to be constantly re-negotiated in a process of discourse between participants in each and every concrete situation (Minsch 2004). This implies a great challenge but also has considerable potential to enhance learning and innovative developments in education (Rauch 2015).

ECOLOG is a national support system with the aim of promoting and integrating an ecological approach into the development of individual schools, and attempts are being made to embed the programme in Austria’s federal states through regional networks. In order to provide support, a network structure involving ECOLOG regional teams in the nine Austrian provinces has been developed; furthermore, a central teacher team (the Environment and School Initiatives [ENSI] team) with an advisory and development function, and a scientific advisory board of a group of representatives of University Colleges of Teacher Education have been established. Central support is provided by the Ministry of Education, by the FORUM Umweltbildung (a non-governmental organization), and by the Institute of Instructional and School Development at Alpen-Adria-University Klagenfurt. Additional support measures are provided via seminars for heads and coordinators of ECOLOG-network schools, the Education Support Fund for Health Education and Education for Sustainable Development, as well as via the National Environmental Performance Award for Schools and University Colleges of Teacher Education (Rauch and Pfaffenwimmer 2014).

Evaluation study of the ECOLOG-schools network

Throughout the past 14 years of the ECOLOG-schools network’s existence, a series of evaluations, inquiries, and studies have been produced (Thonhauser, Ehgartner, and Sams (1998), Ehgartner (1999), Payer, Winkler-Rieder, and Landsteiner (2000), Schober-Schlatter (2002), Rauch and Schrittesser (2003), Knoll and Szalai (2009), and Lechner and Rauch (2014)).

Based on these evaluations, the Institute of Instructional and School Development at Alpen-Adria-University Klagenfurt was commissioned to conduct an evaluation study of those 23 schools that have been part of the ECOLOG programme for the last 10 years (Rauch and Dulle 2012).

The knowledge of teachers gained through their experiences of concrete ecological development processes and its systematic evaluation by way of participatory action research constitutes an invaluable reservoir of practical expertise for everyone involved in the ECOLOG programme and everyone interested in ecological school development processes.

Through guideline-based interviews (Lamnek 2005), this study collects and analyses evaluations by heads of schools and ECOLOG coordinators of the effects of the ECOLOG programme in their schools as well as the experiences the interview partners have had with the programme during the last 10 years. The 23 schools which are part of this study come from all nine Austrian states and represent all
school types, including primary schools, secondary schools, higher secondary schools, as well as vocational schools and higher vocational schools. At these schools, interviews were conducted with 16 heads and 23 ECOLOG coordinators (a total of 39 interview partners). The emphasis of the questions relates to past successes and positive impacts of the implementation of the programme, potential problem areas, and general points of criticism.

Afterwards, these interviews were transcribed and analysed according to the model of content analysis (Mayring 2002). Furthermore, additional material available at the schools (annual ECOLOG reports, annual school reports, teaching materials, the school website, the ECOLOG website, press releases, and school folders) were integrated in the analysis.

Prior to final analysis, a brochure was produced, containing summaries of all ECOLOG-related activities in the form of illustrated profiles of the 23 schools as well as of their successes and challenges that were faced (Rauch and Dulle 2011). This brochure as well as a number of theses, formulated from the preliminary results of the interviews, were presented and put forward for discussion in the context of a workshop with representatives of the schools interviewed and other schools taking part in the ECOLOG programme. In the following section, the theses generated from the interviews and the feedback from teachers that took part in the workshop will be presented.

**Thesis 1**

As a comprehensive concept of school development promoting ESD, which connects teaching and learning processes, school organization, and the school’s collaboration with external partners, ECOLOG is a highly demanding programme. After 10 years, the relevance of ECOLOG varies greatly between different schools. In some instances, it is ‘merely one project among many others’ while other schools have made it their ‘number one priority’. In around one-half of all the schools that were part of this study, ECOLOG has been integrated in the day-to-day life of the school, most of them being primary schools.

**Feedback Group 1**

The relevance of ECOLOG at a particular school largely depends on the enthusiasm of, or the potential to create such enthusiasm among, the teachers and pupils. Actively living by example and providing positive feedback is key to promoting the attitudes that ECOLOG represents. To fill ECOLOG with life and also to discover it in the day-to-day activities of the school (as much of it may already exist, but is often taken for granted) requires a certain degree of creativity.

The path that ECOLOG takes at the schools is described as an ‘evolution’, a process that includes change and depends on the willingness to engage in new processes. In order to support this evolution, schools need to be made aware of the so-called win–win situation the programme entails: when schools choose to make ECOLOG their priority, they receive support on a number of levels, such as for working out the school development plan. Here, the exchange of experiences and ideas during ECOLOG conferences and meetings is particularly helpful. There is a desire for more support via training sessions for ECOLOG coordinators as well as for an increased level of activities in the field of public relations.
Regarding the relevance of ECOLOG at schools, the following criteria were mentioned: size of the school, emphases and foci of teaching, attitudes of the teachers towards the programme, ability and willingness for team work, communication, and level of acceptance of the programme.

**Feedback Group 2**

This group shares the view that ECOLOG can be implemented more easily in primary schools as they, with their system of form teachers, have a simpler organizational structure than other schools. It is essential to introduce ECOLOG to all teachers so that they can more easily develop and take a positive approach to the implementation of the programme and the ideas it represents. In order to make projects more efficient in their conceptualization and realization, education and training in project management is deemed very important. School supervision is mentioned as a challenge or an ‘obstacle’ to the successful implementation of the programme.

**Thesis 2**

Schools that were able to build up a sustainable ecological school structure after 10 years had often already had experiences with ecological education and school development before they joined ECOLOG. Building upon those experiences, the ECOLOG-network supports further development; for example, through regional exchange of experiences and information, the generating of new ideas, the provision of educational materials, and through financial resources. This support is seen as very helpful. Further opportunities for support are seen in the creation of a pool of external speakers and advisors, the development of more varied materials depending on different types of schools, as well as a stronger activity in the area of public relations and the provision of material resources.

**Feedback Group 1**

Development consultants that accompany the process of developing and implementing ECOLOG at schools are seen as helpful. Furthermore, the provision of topic-specific teaching materials is considered a valuable form of support.

**Feedback Group 2**

This group holds the view that regional exchange would enhance the usefulness of the project. Regarding the improvement of the support network, the following aspects were mentioned: the provision of ideas for projects, the development of more varied teaching materials depending on different types of schools as well as regarding specific topics, and the establishment of a database of potential speakers and advisors to promote the ideas of ECOLOG.

**Thesis 3**

ECOLOG-network schools are facing a number of challenges. The support for the development of a sustainable school culture depends on taking seriously the different interests of stakeholders and on working collaboratively on common aims.
Successful ECOLOG network schools have learned to deal with both internal as well as external changes and to embrace diversity.

**Feedback Group 1**

This group emphasizes the encouragement to participate via motivation and the exchange of experiences as well as the development of routines in writing reports as central advantages of the ECOLOG network. The openness of the concept inherent in ECOLOG creates a positive base for cooperation and supports opportunities to utilize individual strengths in the realization of the programme. A particularly popular way of engagement for teachers and pupils is seen in project work. Some schools find it challenging to integrate the majority of the teaching staff and to convince them of the advantages of ECOLOG, an issue that may have negative consequences for the overall school culture. Indifference and ‘headwind’ may occasionally even tire out otherwise dedicated members of staff.

**Feedback Group 2**

For this group, the diversity of topics that ECOLOG embraces is seen as one of the biggest strengths of the programme, as it leaves room for a variety of interests. Anchoring the programme in the school’s mission statement is seen as a positive way to implement changes. Carrying the mission of ECOLOG across changes in the school’s personnel is seen as similarly vital.

**Thesis 4**

The effects of ECOLOG are seen in a number of different areas. Among them are changes in teaching methods (increased project-based learning and social learning, for example), the increased integration of health-related topics as well as ecological and social topics in the teaching, the design, and the organization of the school building (e.g. the schoolyard, measures of energy optimization) and changes in school life (e.g. healthy foods for pupils and teachers). Participation in ECOLOG raises the image of the school. However, the further development and the strengthening of the school’s relationships with external partners and stakeholders over the last 10 years should not be attributed to the impact of ECOLOG alone.

**Feedback Group 1**

Public buildings and, particularly, ECOLOG-network schools should provide a positive example as regards energy efficiency. To fulfil that role, they should be supported in their activities in the field of energy optimization (solar energy, biomass converters). The further development of relationships to external partners is seen as vital, as some schools already have very good relationships with their local authority and with other partners.

This group views ECOLOG as an opportunity to support personal development (‘Bildung’ in the traditional Humboldtian sense) rather than mere education. Thus, the importance of socially relevant topics is also highlighted.
**Feedback Group 2**

This group ponders the question of what actually constitutes sustainable teaching methods. A definition would be very helpful in this respect. External speakers that are more suitable to the interests of pupils are viewed as an important addition to regular lessons.

Some schools view the compatibility of economic aspects and independent thought as well as that of fire protection requirements and ecological building design as problematic or even contradictory.

**Thesis 5**

On the one hand, ECOLOG lives through the particular dedication of individual members of the teaching staff. On the other hand, a culture of mutual collaboration must be established in order for a sustainable school culture to thrive. This poses challenges for schools.

**Feedback Group 1**

The motivation of the teaching staff team is seen as a central pillar in the development of a sustainable school culture. The challenges to this are seen, on the one hand, in the increasing workload of the individual teacher (‘Oh, another project!’), which sometimes causes ‘educational fatigue’. On the other hand, potential envy of colleagues or other stakeholders in the school environment in cases of financial support and project success might make things difficult.

In order to uphold and/or support motivation, the following points were raised:

- Seeking personal contact (information at conferences).
- Inviting others to one’s own environmental courses: ‘Everybody here puts their trousers on one leg at a time.’
- Honouring the small steps and making small progress public via photographs or information on a public display; creating a kind of ‘ECOLOG List’ that is visible for everyone at the school.
- Increasing activities in public relations and media use.

The environmental and social education represented by ECOLOG should not only become a principle of teaching but should also become an integral part of everyday school life and, thus, should be lived by example of the teachers.

**Thesis 6**

ECOLOG-network schools commit themselves to principles of quality development and quality assurance. The production of annual reports in accordance with the concepts inherent in the school’s development plan may often, especially in the beginning, cause difficulties. Efforts and benefits need to keep a healthy balance. After 10 years, schools are often much better able to achieve this. At this stage, the annual ECOLOG report is often seen as a helpful tool for reflexion and planning. ECOLOG is able to make a thematic contribution to the practical realization of legal requirements, such as the establishment of a quality management system as well as of educational standards (especially in the natural sciences).
Feedback Group 1
ECOLOG supports quality development via the definition of visions and aims, such as the formation of a world worth living in and the holistic conceptualization of nature. Furthermore, ECOLOG offers a spectrum of methods, such as evaluation as well as self-based and project-based reflection. The contribution of ECOLOG to the field of personal development is seen in the following areas: strengthening the importance of values and personal competencies, and enabling the awareness of and supporting the careful handling of resources. Individualization, together with the awareness of network structures, is helpful in this regard. The annual report should be redesigned and simplified.

Thesis 7
Processes of ecologization at schools are successful in the long term if they are viewed as dependent both on the build-up of experiences and routines as well on the development of new ideas. ECOLOG offers a variety of thematic links and a support network that enables school-specific and autonomous developments. Every ECOLOG-network school can find and develop its own identity.

Feedback Group 1
The thematic variety inherent in ECOLOG may also be confusing. A further challenge is seen in ‘sustainable project management’ or, in other words, how can individual projects smoothly transition into ‘regular’ teaching?

School culture consists of values. These values need to be clarified for both teachers and pupils, they have to be lived and become a requirement of everyone (e.g. in the school regulations), but they should also be questioned. One way to achieve this was seen in the ECOLOG information booklet, which contains information on ECOLOG, eco-labels, and environmental recommendations. Parents, pupils, and teachers have this booklet at hand at all times.

Feedback Group 2
ECOLOG is seen as a ‘drawing card’ on the way to the development of a school’s own identity. It offers sufficient variety and freedom to support this process. Not least, this process depends on the school type. Moreover, the support network and the professional expertise on offer are seen as helpful.

Conclusions and outlook
The ECOLOG programme has been growing continually for many years, being the oldest network supported by the Ministry of Education. One reason for this is that ESD is always connected with current developments in the Austrian education system such as quality evaluation and quality assurance. Other factors of success are the support system of the network, which keeps the projects going, as well as an active evaluation culture, which includes action research as well as external, formative evaluations, which provide feedback and confirmation (Rauch and Pfaffenwimmer 2014).
A challenge is posed by the sustainable anchoring of ECOLOG in a school at the interface of innovation and as part of the dynamic everyday culture of the school. In relation to regional support systems in the federal states, the respective professional and political contexts play a decisive role. The provision of stable and continuous support, which, at the same time, is flexible enough to dynamically respond to change, both makes high demands on all involved actors and, at the same time, also requires adequate resources.

The aim that ECOLOG follows is the implementation of ESD at individual schools in their respective local environment. ESD is conceptualized as the negotiation of conflicting interests.

Beyond this, ESD cannot come to full fruition in the context of current social arrangements. Instead, ECOLOG challenges those conditions and formulates demands towards co-determination.

Hence, the ECOLOG programme is caught between the danger of being instrumentalized by particular interests (e.g. one-sided economization) and being overburdened (by its claim to formative influence). The creation of spaces for exchange, networking, and reflexion are central elements of the ECOLOG programme, through which it hopes to support ECOLOG-network schools in their constructive handling of this area of tension (Rauch forthcoming).

Disclosure statement
No potential conflict of interest was reported by the author.

Notes
1. ECOLOG is the abbreviation for the Ecologization of Schools.

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