*Creating a school that matters. Networking for school-community development*

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Abstract

This study of the creation of a new upper secondary school in a small community in Iceland focuses on the way in which networking and collaboration across school boundaries contributed to a new form for school practice. The aim is to understand the value of school-community interaction in creating a new school and to understand how the collaboration has expanded both the activities of the school and the local community.  A cultural-historical approach is used to analyse how contradictions in practice act as catalysts for development. Data were generated over a three-year period mainly through ethnographic methods. The expansive learning theory (Engeström, 1987, 2010) provided methods for identifying problems and contradictions and focussing on the way in which they were being addressed in the development of the school. The interplay of conceptual and material tools was fundamental in dealing with the contradictions. The principal's clear conceptual vision on the role of education for individuals and society supported by the ideology of the national curriculum facilitated the process of creating and developing the school. Digital applications and the Internet served as material tools for implementing and coordinating the new school. Networking across traditional boundaries widened the object of school learning and made school practice responsive to societal changes. To conclude: Transcending traditional boundaries through school-community collaboration have promoted a qualitative transformation in school learning.

Keywords: school-community relationship, educational change, role of education, cultural-historical theory, expansive learning theory

Introduction

More than 100 years ago Dewey called for the school to "get out of its isolation and secure the organic connection with social life" (Dewey, 1900/1990, p. 79) and ever since the progressive education movement has emphasized the importance of school community relationship in

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educational reforms (Sanders, 2003). Community involvement takes several forms. Place based learning has emphasized the use of natural and cultural environment as learning resources (Gruenewald, 2003). Schools have responded to the need for educated workforce in the community by customizing the curriculum to the needs of local businesses and make ties with the community for opening up educational and economic opportunities benefitting both school and community (Sanders, 2003). However, schools have resisted change, and changes are difficult to sustain (Tyack & Tobin, 1994). Engeström (1991, 1996) suggests that to overcome the obstacles hindering schools in changing, schools need to break away from the isolation in which school learning takes place and expand their object of learning. Engeström's theory of expansive learning (Engeström, 1987, 2010) was applied by Yamazumi (2005, 2010, 2014) for researching school-community collaboration in Japan and results indicated that the combined effort and contribution of members both inside and outside the school expanded the school activity and brought about new forms of school activities as well as contributing to changes within the communities.

In the article, I will relate to these challenges of expanding the object of school learning and breaking out of isolated school practice, by presenting an empirical case study of a small upper-secondary school in North Iceland, founded in 2010. An interesting feature of the school is the way in which it collaborates with local enterprises, associations and cultural institutions that contribute to teaching and learning in the school in various ways. Networking across school boundaries characterize the school practice not only with the local community but also on national and international levels. The global dimension is part of the school curriculum and the school policy emphasizes the participation of both students and professional staff in international projects.

The focus of the study is on the process of creating and developing a new school by way of networking with the community. Secondly, how the collaboration has expanded both the school curriculum and activities of local agencies resulting in reciprocal school-community development. The purpose is to shed light on the way in which societal circumstances and future visions for the role of education initiated the networking practice. The aim is to understand the innovative value of the new model for school-community interaction and claim for it to be a qualitative new form for schooling that has been brought about by local community participation. The following research questions were used for directing the study:

1. How was the school created and further developed through school-community collaboration?
   a. Which were the contradictions that initiated the school-community networking?
   b. How did different kind of tools support the process?
2. How has networking across school boundaries expanded the object of school learning?
3. In which way does school-community networking make a difference in community?
4. How has the new school model been adjusted and consolidated and why can it be claimed to be a qualitative new form for schooling?

Context

*The school and the community*

In 2010, a new upper secondary school was established in a sparsely populated community in North Iceland. It serves a community consisting of three towns with a population totalling approximately 3500 -4000 inhabitants. In the school year 2015–2016 the number of students were around 250, thereof roughly 100 full time regular students and around 150 distance students, mostly part time students. The three aforementioned towns are situated along the coastline where the most important industry has traditionally been fishing and business related to this industry. Today tourism has become more important, both during summer and wintertime. The area is characterized by high mountains and deep fjords which have attracted a range of mountaineering and other outdoor activities. In light of this and increased prominence of tourism several entrepreneurial businesses have operations in the community, mainly related to high tech fishing industry or tourism, culture and sports.

*Why a new school in the district?*

Conventionally young people from the region would either relocate in order to attend one of two upper secondary school in the region's main town or commence work without further education. According to new upper secondary school act of 2008 (Alþingi, 2008) young people up to the age of 18 have the right to educational access; a right which reflects the fact that parents have custody over their children until they are 18 years old. This has brought about the need for establishing more schools for serving the needs of young people and their families as close to their homes as possible. The national educational policy aims at elevating the educational standard of the nation and all young people are encouraged to go to upper secondary school. Upper secondary schools in Iceland have also served the need for further education for adults that want to catch up and finish their studies, e.g. by offering forms of flexible and distance education. Pressures have been applied on national education authorities by local governments to open new schools, both to facilitate ease of access to education while simultaneously strengthening the functionality of the local communities.

2015–2016 marked the school's sixth academic year; a period in which the school has established itself as an educational institution of importance within the community by broadening educational opportunities for younger people while also providing adults with an opportunity to complete unfinished studies. However, its existence was threatened when authorities wished to streamline upper secondary education in the region by unifying small schools under an umbrella of bigger schools in the main town of the North. Small schools, like the one under study, look upon such suggestions as undermining their autonomy and threatening the often fragile communities they serve. Recently authorities confirmed that the small schools in the region will be allowed to keep their autonomy on the conditions that cooperation between them and bigger schools in the region will be strengthened.

*A new national curriculum*

When the school was under creation in 2010, a new national curriculum was being launched following the national act in 2008. It gives the schools considerable autonomy in designing the content and setting up their curriculum differently (Ministry of Education, Science and Culture, 2012). Upper secondary schools are to be organized as three year courses of study, instead of four years which has been the norm, and planned as an inclusive educational programme for all youngsters age 16-19, including mentally challenged young people. The policy of the new curriculum is characterised by its focus on development and empowerment of students. Emphasis is placed more on competence than knowledge.

*The school*

The school offers programmes in academic subjects, plus programmes in sports and outdoor activity, an arts programme and a study line for mentally challenged students. The schedule is organised in one week modules with all teaching and learning materials organized in a coordinated structure in an online learning management system. The schedule creates free spaces and times for students during the school day to work on any assignment from any class, collaborate with peers, or take advantage of one-on-one time with tutors. For one week, each semester there is an open plan with the possibilities of inviting guests to share their expertise. This arrangement supports the networking practice and helps to diversify and broaden the relevant study routes. Now the discussion moves to the theoretical approach in understanding the way the new school developed in the context described above.

## Theoretical background

My theoretical approach draws on the cultural-historical tradition based on Vygotsky[1] that builds on a dialectical view that looks at contradictions or tensions in practices as catalysts for development. Contradictions are historically accumulated structural tensions which become noticeable as disturbances and act as a driving force in development. The cultural-historical tradition is based on a holistic approach focusing on developmental processes. In defining the unit of analysis, the researcher delimits the developing unit. In the case presented here, the unit of analysis is the creation and development of school practice as it proceeds in in dialectical interaction with the local community and the wider context of society . The analysis of the empirical data is constructed to elicit conflicts, critical events, disturbances or tensions which may reveal the contradictions to be dealt with to develop practice (Engeström & Sannino, 2010, 2011)

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[1] Fleer (2016) has recently drawn attention to that researchers use different names when they refer to this theoretical position such as Activity Theory, Cultural-historical Activity Theory (CHAT) and Sociocultural theory. I use the term cultural-historical approach or tradition in this article.

Vygotsky's approach is simultaneously instrumental, cultural and historical (Livingstone, 2006). The use of tools as mediators for humans to act upon their physical and social environment is central in Vygotsky's theories (Vygotsky, 1978). Material tools are used to bring about changes in the physical environment and conceptual tools direct the mind and behaviour of people. (Daniels, 2001). When people face contradictions in their practice they need both material and conceptual tools to mediate their actions. Vygotsky explained how the two kinds of tools are mutually linked in a way that new material tools, such as ICT tools in contemporary culture, call for new visions, ideas and methods and vice versa. He argues that the mediating tools serve as an auxiliary stimulus for supporting people in dealing with the task at hand (he also used the term secondary or double stimulation, the task or object being the first stimulus) (Vygotsky, 1978). In Vygotsky's work the role of the ideal is important for understanding interaction of human minds and activity in development (Jones, 2001; Vygotsky, 1994). Ideal forms are based on values and goals attached to our core activities, they direct people and mediate their actions, and serve as the motives of their activity (van Huizen, von Oers, and Wubbels, 2005). Therefore, visions of possible future development of practice are imperative for stimulating resolution of contradictions and visionary models serve as an auxiliary stimulus in developmental work.

Engeström has contributed to the development of the cultural-historical tradition through the expansive learning theory (Engeström, 1987; Engeström & Sannino, 2010). "Expansive learning refers to processes in which an activity system, for example a work organization, resolves its pressing internal contradictions by constructing and implementing a qualitative new way of functioning for itself" (Engeström, 2007, p. 24). The expansive learning cycle (Figure 1) is a model that was developed for use in guiding formative interventions for supporting developmental work, but it has also been used as a model for directing analysis of dialectical development (Engeström 1999, Engeström & Sannino, 2010, Jóhannsdóttir, 2014), here the creation and development of the new school in interaction with community.

5. Consolidating
the new practice

1. Questioning
Need state

Resistance

2. Analysis
Double bind

4. Implementing and
testing the new
model
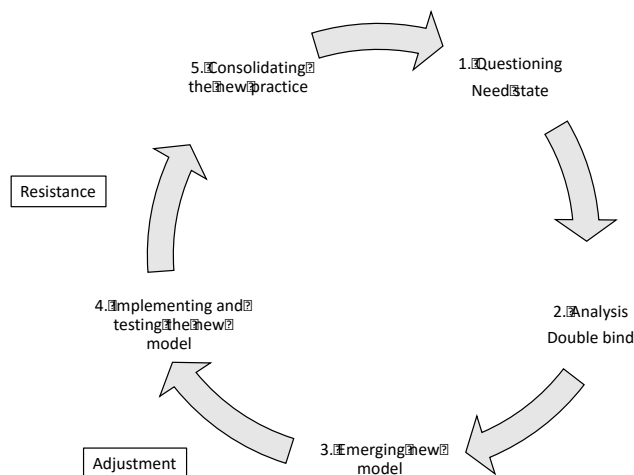
Adjustment

3. Emerging new
model

Figure 1. The expansive learning cycle, adapted from Engeström, 1999, p. 384

The analysis aims to recognise tensions and critical events pointing to underlying contradictions that need to be dealt with for developing the practice. In the next step the attention is turned to the way in which material and conceptual tools, and their interaction, function as a support for people in resolving contradictions when dealing with problems in their practice. The first step suggested in the model is to focus attention on "the need state" when people start to question the existing practice and recognize a need for change to overcome the problems disturbing the activity. In the process of analysing the situation (step 2) and finding out what to do to make the practice function better, people may find themselves in a double bind situation when they experience contradictory messages and don't know how to react. The double bind situation puts a pressure on people to search for solutions for resolving the contradictions and getting the activity going (Toiviainen, 2003, p. 36). In such cases mediating artefacts are looked upon as important auxiliary stimuli for supporting the development of a new mode of practice (Vygotsky, 1978, p. 74). The third step includes forming new models for practice, in our case creating a new form for school practice, by reconceptualising the object and motive of the activity or forming new ones in search of a future oriented innovative solution to the problematic situation. The fourth step is implementation and testing which may call for a process of adjustments to deal with resistance and face new challenges. The last step is consolidation of the new form for practice, that is recognition and acceptance of the new school model.  Because as Ilyenkov (1982, p. 83-84) noted: "Every new mode of man's action in production, before becoming generally accepted and recognised, first emerges as a certain deviation from previously accepted and codified norms."

Cultural-historical research has been concerned with the problem of the isolations of school practice from their community practice and the need to expand and re-contextualize the object of school

activity (Engeström, 1991, 1996). The traditional object of school learning has been textbooks whose content students are supposed to learn and the outcome of the activity is either success or failure in exams. This proves problematic since schools should generate knowledge for solving societal problems. Engeström's theory of expansive learning suggests that the object of school learning needs to expand in order to bring about new forms of learning in schools and that the isolation in which school learning takes place is an obstacle that hinder schools in changing and developing their practice. Yamazumi (2010) argues that for dealing with this "it is becoming increasingly important for schools to build partnerships with community organizations, businesses, expert groups and other relevant actors outside of the school and to invite them to contribute to the curriculum and lessons." (ibid, p. 133). Engeström (1991) suggests creating networks of school professionals and various members and agencies in the outside community in order to collaborate on the school curriculum as a way to expand the object of schools and lead to "a qualitative transformation in the entire activity of school learning" (ibid, p. 257). He explains that when school-community networks collaborate on teaching and learning, the practice of the school is reflected upon and reorganized and as a result the context of the learning is changed. In this way, the institutional boundaries of the school are transcended and the school "turned into a collective instrument for teams of students, teachers and people living in the community" (ibid, p. 256).

In applying Engeström's theory, Yamazumi's interventional research project aimed to transcend the Japanese school's institutional boundaries by creating networks of learning based on the cooperation of university, local primary school, families, experts and diverse local agencies (Yamazumi, 2009, 2010, 2014). His results revealed that the collaboration and interaction inside and outside of the school expanded the object of school practice and enabled schools to become active agents in societal change where they helped to "… revitalize the community, enliven our [the] culture, innovate the economy and activate citizenship" (Yamazumi, 2010, p. 158). He proposed the concept of *hybrid education* or *hybrid educational innovation* to explain a promising path for school development based on a combined effort and contribution of members both inside and outside the school where "participating organizations and actors can gain the ability to share and expand new endeavours in educational work" (Yamazumi, 2010, p. 134). Hybrid learning is depicted in a two-dimensional figure of expansive development in schools (Figure 2).
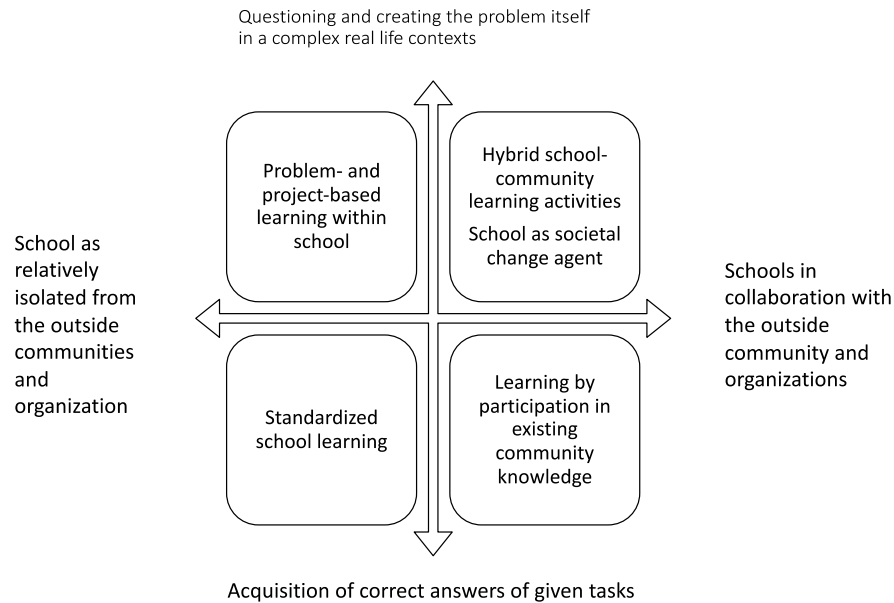
Figure 2. Two dimensions of expansive development in schools, adapted from Yamazumi (2009, 2010 and 2014).

"These two crossing dimensions are key features for the expansion of school activity to transcend both as encapsulated concept of school learning and the institutional boundaries of school organisations" (Yamazumi, 2014, p. 66). Based on his research, Yamazumi suggests that linking the learning and teaching in schools more to the community – culture, nature and economy – opens up possibilities for expansive development of curriculum, teaching and learning in schools. He relates this to a new paradigm of networked organisations that researchers within cultural-historical activity theory have directed attention to as a successful way of collaborating across boundaries for developing practice (Engeström, 1996; Yamazumi, 2010). The study presented contributes to this knowledge base where cultural-historical approach is used for understanding how contradictions in educational practice can be a catalyst for change and development. Foremost is the elucidation of this collaborative, networking-based role across traditional boundaries as a mediator for breaking the isolation of schools, widening their object and developing school practice in response to individual and societal needs.

## Data and methods

The cultural-historical approach provides methods for analysing development when people and collective activities strive for change in their practice as explained above. The expansive learning cycle is used for directing the analysis with the unit of analysis being the process of creating the school by way of school professionals' dialectical interaction with the community. The analysis was done in several steps. I begin by analysing the preparation phase when tensions arising from underlying contradictions are identified, then I identified which tools supported overcoming the contradictions and supported ongoing work on establishing the school. Emphasis is put on how interplay of conceptual and material tools functioned as second or auxiliary stimuli in establishing,

developing and maintaining the school. The expansive cycle presumes that practitioners usually have to deal with and overcome additional problems or contradictions as a new model is taking form. In the last part of the analysis I refer to the latter phases of the expansive learning cycle and discuss implementation, adjustments and consolidation of the school model and the way in which it has met new challenges that have threatened its existence.

Data were generated through ethnographic fieldwork throughout 2013–2016. The author is a lecturer in educational studies and a researcher at the University of Iceland in Reykjavík. In May 2013, as a specialist from the university, I was asked to contribute to a teacher workshop that was dedicated to the use of ICT and online teaching and learning. I spent two days in the school during the workshop and it aroused my interest and in reflecting on the visit I felt it would be significant to carry out research on the school's establishment, consider its development, explore what conditions made the school special and whether and how it made a difference in the community. The principal and the staff accepted my proposal of conducting the research. I would use ethnographic approach which included visits to the school for observing daily practice and for informal and formal interviews. For preparing the research I returned to the district for one week in the summer 2014 during which I met the principal several times for in-depth discussions and planning. She talked about her visions for the role of the school and the way in which it was based on her experience of working on innovative projects in a range of positions in the Icelandic school system. She explained how these experiences affected her work in preparing and forming the school.

My first research visit was in November 2013 followed by for 2–3 days twice a year, first in the autumn and then again towards the end of the school year in May when I have attended the graduation ceremony and the final-term exhibition of student work. At these events, I was able to meet students, family members and members of the community. In the May visits I have attended the two day professional workshops where the teachers discuss the past school year and plan for the next. Data consists of the transcripts of formal interviews with 5 teachers and the local stonemason as a representative for firms collaborating with the school and one focus group interview with graduating students. Written field notes from classroom observation include entries on informal discussions with the teachers, and points noted during the workshops. On various occasions, I have met members of the general public and discussed with them their views on the school and its changing role within the community. The school web is a valuable resource for the research with extensive information about the school, including internal and external evaluation reports and a weekly newsfeed highlighting events such as visits from local and international guests.

Within the cultural-historical tradition the aim of research is to investigate possibilities for development of practice. Research results reveal an understanding of change processes in certain circumstances and generate knowledge that may or may not be used in other circumstances. Findings are presented in the form of new concepts, models and hypotheses and their generalizability is a "question of practical relevance for other activity systems facing similar

contradictions in similar developmental phases" (Mäkitalo, 2005, p. 105). Concepts emerging from the analysis are put forward to embody issues of concern and importance in the situation. Therefore, criteria for quality in such research depend on the usability of research results for developmental work. In order to enhance credibility, preliminary results were presented and discussed with teachers during visits to the school. Final results as presented in this article were discussed with and confirmed by the principal.

## Results

In discussing the results, I follow the order of the research questions (p. 2) and make reference to theory. The preparation and creation of the school model and how it was developed in school-community collaboration is described with reference to the first half of the expansive learning cycle (Figure 3). The development of school-community networking for overcoming contradictions and the way in which different kinds of tools served as stimulation for supporting the school creation process is outlined. Networking across school boundaries has put its mark on teaching and learning. This is discussed in the context of the expansive learning theory and Yamazumi's claim about characteristics of qualitative new forms for schooling (Engeström, 1987, Yamazumi, 2010). The school has made a difference in the community and the school model has proved its value to the community and others since it has attracted distance learners from all around the country and even from Icelanders living abroad.

### *Contradictions responded to by school-community networking*

In keeping with the theory, tensions and critical events in the preparation phase were identified as well as the contradictions which needed to be resolved. The principal was appointed in February 2010 with the first intake of students in August that year. She could draw on her wealth of experience related to education, as a teacher and counsellor especially in use of ICT and school development. Her initial education was in systems analysis and later she obtained a master's degree in education with research on the use of laptops in an upper secondary school and a second master's degree in artistic photography. She had been active in politics and had served as an alternate member of parliament for several years.

The first contradiction she encountered was unexpected. Local students, parents and sports clubs doubted the feasibility of the new school despite support from the municipality. The general public even questioned the ability of the community to operate an upper secondary school. The challenges ahead for the principal were to establish relationships with the community to create the kind of school that would appeal to students and parents as well as convincing the community of the feasibility of running a good school. Supported by the school committee, the principal started to make connections with local firms and associations as well as parents and the general public to discuss ideas about the kind of school they wished to have in the community. Local enterprises, businesses and individuals became part of the process by helping on a practical level to prepare the

school for opening. Forging contacts proved to be of mutual benefit for both the school and the local businesses.

### *The role of the principal's vision for the role of education in the school creation process*
Based on her strong vision of the role of education for empowering people, the principal felt it was essential to create a school that would make a difference to individuals and the community. Her experience in politics had taught her that passivity and lack of initiative were often a problem in fragile communities in the Icelandic countryside. She encouraged innovative thinking and was keen to motivate people to take initiative. The principal's vision served as an important second stimulation that supported the formation of the school. In cultural-historical theory ideal forms or visions of possible future development of practice stimulate resolution of contradictions. Visionary models serve as an auxiliary stimulus in developmental work (Vygotsky, 1994, Davydov, 1999). The challenge was to develop the vision into a holistic ideology that could be realised  in a functional model for school practice that would appeal to prospective students. The prerequisite was that the running of the school be accepted by the community as being feasible.

### *Expanding the object of school learning by networking across school boundaries*
Influential agents in sport and recreation contributed in preparing programmes in sports and outdoor track as optional study routes that the school would offer, taking advantage of the natural environment, high mountains with snow during the winter, the fjords, the lake nearby the school etc. These local groups were connected to sport, and search and rescue movements at a national level and by incorporating their respective training their specialized knowledge could be integrated into the curriculum. Members of the local and national rescue teams, which are reliant on voluntary participation, step in as teachers in the courses they provide. The sports clubs and the rescue team allow free access to their facilities, lend tools and equipment and the school can rely on goodwill of the general public for specialized support in running these programmes. By acknowledging the local expertise as a valid part of the school curriculum mutual trust is enhanced and isolation of school work is counteracted (Engeström, 1996).

Entrepreneurial companies, for example, connected to fisheries, tourism, and other outdoor and cultural activities in the district contribute with their expertise by visiting the school and teach students about their activities. They are also committed to support the students in developing their innovative ideas before handing in assignments. By collaborating with local enterprises, the school has expanded the content of the school curriculum and also expanded traditional teaching and learning when local experts function as teachers and guides intermittently.

By collaboration with local artists and the music school, study routes which emphasize fine arts, art photography and creative music was formed. Later collaboration was formalized with a local international art house and residency which hosts international artists, who are committed to running workshops in the school during their stay. Students in all subjects present their creative

projects and artwork at a final term exhibition which is open to the general public and has become a popular event in the community.

In the above examples, we can identify expansion in two dimensions, horizontal and vertical, referring to Yamazumi's model on expansive development in schools (Figure 2). These are examples of a school practice that breaks away from isolation by collaborating with the outside community and organizations as depicted in Yamazumi's model (the horizontal axis Figure 2). The entrepreneurship course is a good example of a school practice moving from standardized school learning of correct answers to given tasks, to questioning and creating the problem itself in a complex real life context (the vertical axis in Figure 2). Students also move horizontally from standardized school practice to participation-based learning in existing community practice such as the rescue team voluntary practice. Here, the development of networking practices as an appropriate working mode was crucial since it became the key to school-community collaboration. Networking across school boundaries has expanded the object of school learning (Engeström, 1991, 1996) and has led to expansive development of teaching and learning in the school (Yamazumi, 2010, 2014). Following Yamazumi (2014) the crossing of these two dimensions are key features in expanding school practice and networks of learning across school boundaries open up the possibility for the school to become an agent for societal change (Figure 2).

The interaction of future visions and networking practice served as mediating tools for resolving the contradictions and developing the new school. Both would be classified as conceptual tools in Vygotsky's theory (Daniels, 2001; Vygotsky, 1978). However, more tools, both material and conceptual, were involved as auxiliary stimulus for supporting the process of creating the new school. The new *National Curriculum* (Ministry of Education, Science and Culture, 2012) laid the guidelines for the designing of the school curriculum, and with its emphasis on competencies measured by learning outcomes rather than specific knowledge the door was opened to less traditional subjects. This served as a stimulus for school-local community collaborations and gave the opportunity to change traditional programmes and structure and rethink the organisation of learning, teaching and assessment.

The inclusive student centred pedagogy of the National Curriculum supports school practice with its emphasis on empowering students and supporting their development which is in accordance with the ideal form for school emphasized by the principal as important guiding light for directing the creation process. *Information and communication technology* have been integral material tools in making the model for the school a reality and functioned as an auxiliary stimulus in implementing the school model. Online course management systems serve to organize teaching and learning while coordinating the progress of students' learning and teachers' teaching. The online platform also supports the networking across school boundaries by facilitating the contribution of members outside the school and their communication with students.

***Local workplaces sharing responsibility of education for mentally challenged students***

The *inclusive educational policy* (Ministry of Education, Science and Culture, 2012) has commissioned upper secondary schools to offer special education programmes for mentally challenged students. This was welcomed in the community since previously students were away from home to go to school. In collaboration with local companies and institutions this programme is implemented with students spending one day per week as apprentices at a workplace. Workplaces committed themselves to supporting the education of the mentally challenged students. This shared responsibility has been an important bridge between the school and the community as becomes evident in the narrative of the stonemason below. The programme became a shared object (Engeström, 2001) that served for enhancing understanding between the school and the outside organizations and supporting the networking practice.

When preparing the establishment of the school the principal contacted the local stonemason to ask if his company could take on several tasks related to the school. Good collaboration developed when the stonemason's company accepted mentally challenged students as apprentices from the outset, further ensuring mutual goodwill. The stonemason explained how the responsibility for students' workplace education, involved the company in the school 's pedagogic practice. His own interest increased  in the school programme and he enrolled himself as a student to finish the matriculation examination which he had not completed as a young man. This is a good example of the importance of  the opportunity the new school created for adults.

Later the stonemason made an offer for the mentally challenged students in the open mid-semester week which he labelled: *From an idea to a product.* The school had recently got a computer operated laser cutter and he felt it was important for the workplace students to learn to use the machine to prepare and print items which  the students proudly managed to do.  The fine art teacher became interested in further collaboration with the company and the school invested in a 3D printer. The sign-making company and the school signed a contract in autumn 2015 on their collaboration on the concept ArtFabLab[2] and the stonemason works as an assistant to the art teacher. The students can use other tools owned by the company such as a large laser cutter, vinyl cutter and diverse stone masonry equipment, enhancing students' use of up to date tools and their creativity. The example of the stonemason is indicative of the way in which workplace training have facilitated boundary crossing collaboration between the school and community organizations. This partnership has enriched the curriculum, making modern tools available for student learning and calling for new kinds of teaching and learning practice, thus overcoming the isolation of traditional classroom based practice (Engeström, 1991).

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[2] A fab lab, an abbreviation for fabrication laboratory, is a small-scale workshop offering digital fabrication generally equipped with an array of flexible computer-controlled tools see e.g. Wikipedia. ArtFabLab focuses on artistic work.

I have identified components of the school model, resulting from networking and supported by an interplay of conceptual and material mediators (Figure 3). The principal's vision on the role of the school for both students and the community was of uttermost importance and networking as a mode of collaboration supported by ICT tools became the means for realising the vision. The shared responsibility of the education of the mentally challenged students served to link the school to workplaces and the ideology of the national curriculum supported the creation of such at school model.
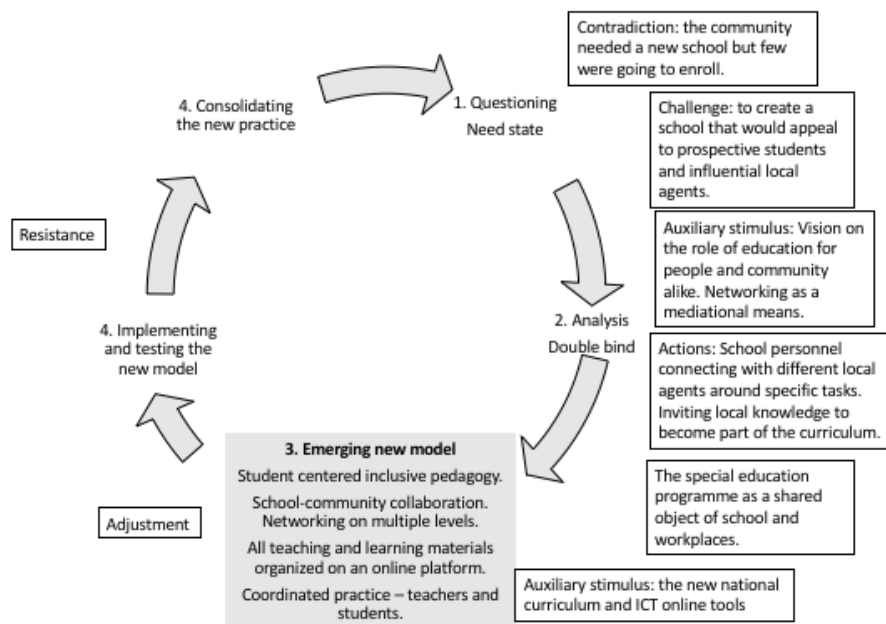


Figure 3. The process of creating a model for the new upper secondary school

### Extended networking and use of ICT tools

The importance of acquiring new perspectives through global connections was also addressed through participation in international collaboration projects. Both students and teachers have had the opportunity, through European and Nordic exchange programmes, to visit schools in other countries, such as Spain, Germany and Denmark, and host visits in return. The school is currently working with the Ministry of Education in Greenland on developing distance education in upper secondary schools.

*The Distance College* – a network of relatively small upper secondary schools situated in the Icelandic countryside is an example of networking practice on a national level. It was established to strengthen the  professional foundations of the small schools but also for economic reason. By exchange of students and teachers it is possible to respond to the problem small schools face, either too few students in a course or lack of specialized teachers. All schools within the network have agreed to accept distance online learners in courses offered by specialized teachers, thereby ensuring the possibilities of students to complete their chosen study line.

The model of the school under study with coordinated practice and the use of the same online platforms for teaching and learning facilitates access for distance learners. Digital resources are central to the organisation and daily practice of the school. All students are required to have laptops, and a wide range of free programs is available. Diversity of instructional methods is enhanced by the use of information and communication technology, including different media for students to use in developing and delivering their projects (Stefánsdóttir, 2013). In realising the school model, it is argued that networking in interplay with use of ICT tools has been the most important second stimulus. Participation in the Distance College relies on the use of Internet and so does the varied international collaboration.

### The way in which the school has mattered for the community

The change most appreciated in the community is the fact that young people aged 16–20 are now able to live at home instead of attending school elsewhere. The families have welcomed this change and the young enlivened social life in the community. The sports clubs notice a positive change since they can maintain various sports impossible before. Local cultural life has been revitalized owing to the activities of the school. Art exhibitions are held both in the school and local galleries, with art education in the school arousing interest in art in the community giving some adults a second chance to educate themselves. "The end-of-year exhibition of student work is well attended giving rise to pride among the school staff, students and the community" as expressed by the vice-principal at the graduation ceremony in May 2016.

From the point of view of firms and organisations collaboration with the school has expanded their object of activity by contributing to teaching and learning in various ways. The stonemason's story serves as a good example. His company agreed to take mentally challenged students in workplace learning and thereby shared the responsibility of their wellbeing and education with the school. Through this shared object, the stonemason gained insight into the school practice and became interested in how he and his company could contribute. The arrival of the school and collaboration with the local community has enhanced the viability of agencies involved and thereby the sustainability of the community.

### A qualitative new form of schooling consolidated

The expansive learning cycle stipulates that the emerging model of new practice will go through phases of adjustments during the period of implementation and before being consolidated and respected as a new form for practice. The final section of the results will look at the second half of the expansive learning cycle for analysing challenges that have threatened the school since its foundation. The school has met the challenges by adjusting the model (Figure 4) and the factors that have served as auxiliary means for supporting the development have been identified. The model has proved its quality in terms of its capability to respond to changed circumstances, and the importance

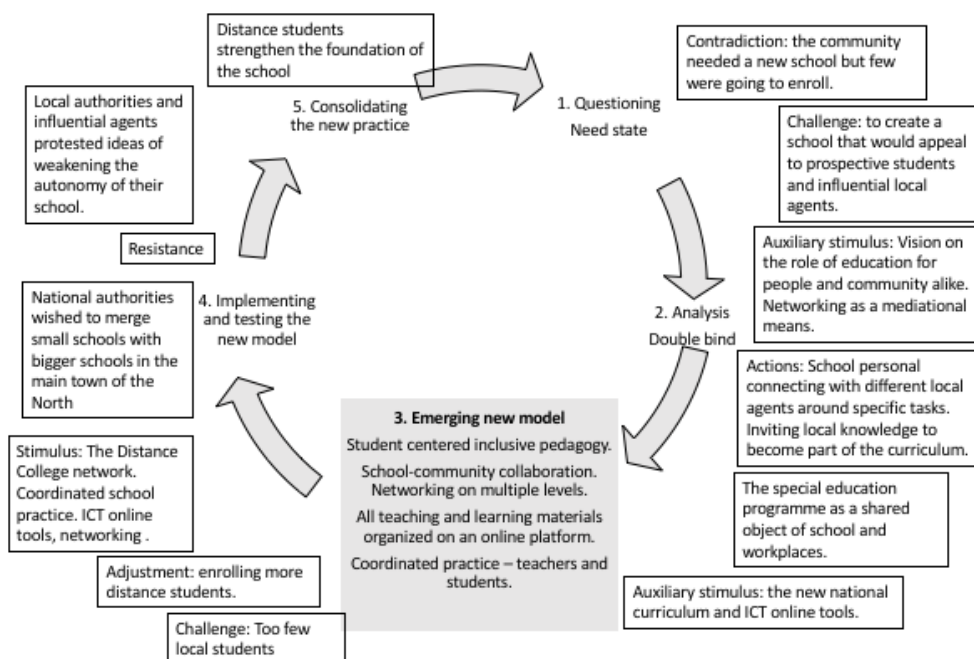of school-community collaboration in resisting outside threats to consolidating the school model (Figure 4).



Figure 4. Adjustment and consolidation of the model for the new upper secondary school

Upon the school's establishment, it was expected to enrol approximately 150 students. By the school's third year with the intake of three age groups students numbered 170. Of these 40 were adult learners either finishing their matriculation exams or attracted by the different art courses, such as painting and art photography. The course management system enables them to follow the courses online allowing flexible attendance for those who work or have other obligations. By the sixth year of the school, this group had shrunk, probably because local demand has been met. From 2015 there has been an explosion in enrolment of distance learners in the school from all around Iceland nearly half of whom live in the capital and the surrounding area and some live abroad. At the same time the number of regular students had decreased making it more difficult to justify the existence of the school. In the fall term 2016, 178 distance learners were enrolled while regular students had dropped to about one hundred according to the yearly report on the school web. The offering of online learning is a response to the contradiction that although the municipality wanted a school in the community there were too few local students to make it feasible.

The reason for the decreasing number of full-time students is mainly smaller age groups although a slim majority have elected to attend the school. The majority of the young people from the neighbouring municipality has preferred to go to bigger schools in the main town in the district. The capability of the school to attract distance learners has preserved the school's viability both professionally and economically. The participation in The Distance College network has encouraged

this development. The school has attracted more distance learners than their proportional share in the network, with applications from students outside the network also increasing. The coordinated teaching and assessment practice with weekly feedback to students, and the use of course management systems and diverse digital applications have facilitated access of distance learners. This has contributed to strengthening the position of school as an alternative educational institution in Iceland.

In autumn 2015, the Icelandic Minister of Education visited the community to present his plan to merge several small schools in North East Iceland under the umbrella of two bigger schools in the main town in the district. A community meeting had been convened for presenting his new arrangements to the public. Influential people and municipal authorities that were proud of their school and the difference it had made to their community, reacted strongly to the idea of a merger. After day-long discussions with the minister and his delegates in which the principal participated, it was decided that the idea of the merger would be withdrawn and at the community meeting in the late afternoon the suggested change in the school status was declared to be a misunderstanding. However, the minister expected the schools to accept an agreement on the formation of a network in North East Iceland of all upper secondary schools. The proposed network was supposed to function in much the same way as The Distance College network. The network agreement has not yet been implemented and in fact it is difficult to see the need for a regional network when the use of ICT has made collaboration across distances feasible and indeed the small schools all around Iceland already have a well-functioning network.

## Conclusion

The aims of the study were to understand the value of a new school and community interaction in the development of both the school and the community and to explain the way in which the networking practices affected the object of school learning as well as activities in various local workplaces. The above analysis has explained the role of school-community collaboration in the creation and development of the new school, such as the case of the stonemason and the way in which networking practices across school and community were used to form contact with community members for collaboration on specific projects related to school practice. The networking with the local community in the beginning has been the hallmark of the school's practice for breaking the isolation of the school by extending its networks at national and international levels. In responding to new challenges and circumstances the school principal felt that the networking mode of practice was important.

The results of the analysis have drawn attention to the interplay of conceptual ideas and material tools in the creation and development of the new school. The principal's vision on the role of education for individuals and community was crucial and appropriate for facing contradictions in the initial phase. At the same time the vision formed a profile and ideology for directing the formation of

the school. The new national curriculum served as an auxiliary stimulus for supporting the formation of school policy, while digital applications and the internet served as the appropriate concrete tools for implementing and coordinating the new model in functional school practice. Both the use of ICT and the networking practice enabled the response to new challenges such as the decreasing number of local students calling for enrolling online students to make the school viable. The interaction of conceptual tools, such as visions, ideology and modes of collaboration together with ICT tools supported the creation of the school and development of the school practice. The study shows the necessity of the interplay of conceptual and material tools (Vygotsky, 1978) in supporting development of school-community collaboration in similar situations.

The study has revealed how collaboration with members outside the school has expanded the object of school learning and has transcended traditional boundaries of the school signifying a qualitative transformation in the activity of school learning (Engeström, 1991, 1996; Yamazumi, 2009, 2010, 2014). The students' object in school learning changed from working with textbooks to dealing with projects and problems within the school or to participating in community learning (Figure 2). The networks of learning across school boundaries have resulted in a qualitative new form for schooling enhancing the potential of the school to act as a societal change agent. The school-community networking has resulted in a sense of common ownership of the school as became evident when the ministry planned to diminish its autonomy and turn it into a branch of a bigger school.  Local people felt the move to be an attack, not only on the school, but on the community as a whole. The school-community's resistance and how it managed to reverse the ministry's decision is evidence of the school's value to the community and an important step in confirming the school model.

Many problems of education within the market society lie in the contradiction between the usefulness of education to society and the exchange value individuals get from school certificates. On the one hand education is thought to be a common good for developing viable communities and empowering individuals as societal citizens. On the other hand education has exchange value for individuals who may use education for enhancing their position in the labour market. The cultural-historical approach and the use of the expansive learning theory have confirmed that contradictions can be a catalyst for change and development. The findings indicate that contradictions should be addressed and the need for interaction of ideology and technology tools should not be underestimated. The strong vision of the principal regarding the role of education serving both individual and community served as the germ cell, that is an abstract idea that enables visions and ideals to be transformed into concrete practice.

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