

Developing Supportive Learning Environments

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This pilot study was carried out in order to determine how Estonian music teachers can recognize opportunities for creating the best possible learning environments for teaching music in general comprehensive schools and kindergartens. As a pilot project, it was also meant to pave the way for a future larger-scale research project, as music education requires specific learning environments. Supportive learning environments are of particular significance for implementing national curricula. The design and development of conducive learning environments largely depend on the teachers' professional competence, especially their ability to structure different learning environments with regard to space (school architecture, classroom facilities, health requirements), study materials (traditional textbooks and workbooks, musical instruments, opportunities to make use of virtual environments), and social environments (class size, positive atmosphere, rational timetables, individual curricula/consultations, differentiation and individualization of learning processes). The research methods employed were document analysis, questionnaires and focus group interviews. The pilot study identified a need for clearer specifications for learning environments either in national curriculum documents or handbooks for curriculum implementation. Teachers need in-service training to improve their professional skills in order to more precisely structure learning environments and to integrate the formal and informal elements of organized learning. Some recommendations can be made for the further improvement of pre- and in-service teacher training by including new academic and practical themes into existing disciplines/courses related to general and music didactics. Such skills could contribute to the educational excellence of teachers and the quality of learning for students, in music as well as general education.

Keywords: learning environments, national curricula, teacher competencies, structure of learning environments, design of supportive environments

Introduction

The research question of learning environments was triggered by the new NC (national curriculum) documents for general comprehensive schools, which appeared in 2010/2011 as two separate documents—one for basic schools and one for gymnasia. Both documents contained new and bold approaches and "aspirations" for all school subjects, aimed at helping students to acquire numerous modern competencies and skills. Music education, as one of the mandatory subjects in Estonia, has ambitious objectives:

to develop students' musical literacy skills, so that they know and maintain the traditions of national culture, participate in its promotion and understand and respect different national cultures but also comprehend and value the creation of pieces of music, and take a critical attitude to the information technology and the media-based environment.

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Music education has the following components: singing, playing musical instruments, musical movement, composing, listening to music and musicology, musical literacy and educational outings. The subject of music supports the development of students' individual distinctive features through musical self-expression. Music is taught to open up and broaden the scope of opportunities for involvement in and enjoyment of music. The emergence of lifelong musical hobbies is supported. By introducing Estonian and global musical culture to the students their musical tastes and socio-cultural value judgements are shaped.

Estonian Music Syllabus in the National Core Curriculum for Basic Schools

Similar aims and activities can be found in the music syllabus for upper secondary schools (gymnasia), and both documents have been compiled according to specified criteria focused on the development of aesthetic tastes, creative self-expression and understanding, and reinforcement of the student's personal relationship with music.

In addition to the description of the selected content for studies and activities, there is a short section on the physical environment for learning a particular school subject, which mostly pertains to the physical attributes of the classroom and furniture. The National Curricula of 1996 and 2002 did not provide specifications for learning environments, and as teachers are responsible for implementation of the curriculum, problems with the practical implementation of the syllabi arose almost immediately. Suffice it to say that learning music, physics or languages all require different and specific environments. Developing supportive environments is within the domain of teachers' pedagogical competence. At the same time, Anu Sepp began her research at Helsinki University about music teachers' thinking skills (Sepp, 2014), which led us to think about how teachers design and structure learning environments for music education.

Background

Several researchers have tried to analyse and structure environments that are needed for or can support learning, both in formal and informal settings. According to Wilson (1995), "minimal learning environments" are comprised of the learner and the room/space used for studies. Almost a decade later, Salomon (2006, p. 255) declared that a learning environment can be any environment where learning takes place, and highlighted its character: The environment for studying has been specially designed and learning takes place as a supervised process, where instruction can be provided by teachers, computers, worksheets, etc..

Some researchers have used the term "educational environment". Palmgren and Chandratilake (2011) have defined it as the character, spirit and culture of a particular educational institution, which creates the identity and shapes the behaviour of its students; it also provides a prognosis about students' future academic achievement, satisfaction and success.

According to Edmonds (1999), all learning environments are complex and multidimensional, and even if information about their components and inter-relationships was available, it would still be very difficult to describe them. Although G. Solomon has analysed possibilities for classifying learning environments according to analytical or systematic paradigms, all learning—its content, environment and organization of the process—has to be considered as a meaningful whole when trying to design and develop supportive learning environments.

Brotheus, Hytönen, and Krokfors (2001, p. 54) have defined the following elements of learning environments: their physical and pedagogical characteristics, the interaction between and mutual influence of the individual and the environment, and, finally, communication and the development of concepts and thinking

skills of a particular individual.

The development of student-centred environments according to the constructivist approach has been extensively studied, especially in recent decades. Several theoretical perspectives have been put forward, e.g., the collection "Theoretical foundations of learning environments" (2012), which provides a solid foundation for the organization of learning with comprehension. Vygotsky's zone of proximal development and scaffolding tasks for learning, as well as the development of learning communities and aspirations towards independent learning, have led to the identification and consideration of social contexts that can support or hamper learning in several respects. The latter has often been described as the "hidden curriculum" or hidden agenda, which must be viewed as a social presence, especially when considering modern media and technology-assisted courses.

One more viewpoint, presented by Harris, Marx, and Blumenfeld (2008), deserves mention. They list the following main characteristics of learning environments: aims, tasks, instruction materials, social organization, teachers, technologies, and evaluation. While these characteristics can usually be found when analysing a learning process as a whole, some of them may be absent and others can be of varying significance.

Finnish teachers, trainers and educators (Manninen et al., 2007, pp. 36-41) have specified the following learning environments for use in schools:

(1) Physical environment—rooms and premises that are safe, aesthetic, meet hygienic requirements, and are suitable for interaction; various characteristics of the premises such as the design of the classroom, construction materials, colours, temperature, and air quality, which are necessary and suitable for the planned learning activities;

(2) Social environment—communication and the learning process (teachers as intellectuals and competent professionals; use of group work and other forms of learning).

The social aspects lead to reflection on the suitability of different everyday learning activities in light of the students' and teachers' different socio-cultural backgrounds, genders, ages, preferences, etc.. An inclusive approach and a specially designed infrastructure have a decisive role in shaping a process of learning which is acceptable to all the participants;

(3) Technological environment—This includes info-communication technologies since the 1980s, e-learning, m-learning, blended learning, Wikipedia in 212 languages, blogs, learning platforms, etc.. The use of technology has become increasingly influential and meaningful in didactic contexts and also in virtual environments inside and outside of the classroom;

(4) Local environments—the opportunities that different local institutions (museums, parks, urban areas, companies) or landscapes (woods, bogs, mountains) offer for study trips, field work, etc.;

(5) Didactic environments—study materials which support the acquisition of content (information, knowledge, skills, values) selected for learning and specified in the curricula. Defining the didactic environment is the foundation of planning and design, and is decisive for all the other aspects/elements that contribute to the educational and pedagogical objectives, and for sequencing of learning activities and selected methods, and supporting the acquisition of the content. The didactic environment also includes the value orientation and mission statement for all educational activities.

With regard to the cultural heritage of Estonian schools, the first official documents specifying learning environments date from the time of the Republic (1918-1940). Special attention was paid to school architecture and the planning of classrooms (no north-facing classrooms were allowed!), school grounds and gardens, as

well as requirements for organizing excursions and field trips (Kurvits 1938). Some of these principles are still being applied to learning environments, the basic components of which are the following:

(a) Spatial environment—must be functional; the school architecture must provide the facilities required for specific learning activities, e.g., classrooms, labs, gym, staffrooms, library; the infrastructure must meet safety, hygienic and aesthetic standards. Schools must be designed according to the curriculum being taught at that institution;

(b) Study materials—must correspond to the curriculum content specified in the syllabi. These include traditional study materials (textbooks, workbooks, maps, lab equipment, instruments, subject-specific materials, etc.) and study materials for virtual environments. The time spent in virtual environments should not exceed four hours per school day;

(c) The social environment and organization of work, the objectives of which are instructional professionalism, cooperation and achievement. Every school is expected to function as a team of professionals, to observe a rational timetable, and to provide a friendly and supportive atmosphere where individual abilities/capacities are respected and consultations are readily available (Läänemets, 2013, pp. 46-47).

Learning Environments for Music Education

There is not a great deal of literature analysing learning environments for music education in general comprehensive schools, as there are very few countries where music is taught as a mandatory subject. In Estonia, the system of music education starts in kindergarten and continues through upper secondary school (up to and including Grade 12). However, the number of countries trying to introduce wider music education is gradually increasing, especially since recent brain research has established the value of musical activities for personality development (Gruhn, 2005; 2006).

As already mentioned, learning environments for music education are specific, multiple and correspondingly costly, which has made it in best cases an optional subject at general comprehensive schools in many countries, or it has been offered at specialised fee-paying schools or through private tutoring. In light of the tradition of music education in Estonia, some practical recommendations for the equipment required for music classes have been offered by Päts (reprint 2010) and Kaljuste (2011). Both highlight specific requirements for room/space and study materials for music education in addition to those all school classrooms must meet. While these recommendations functioned well at the time, they require updating for current conditions.

The environments needed for music education have also been studied by Jamerson (2010), who devotes special attention to the quality of rooms needed for practicing and performing music. He considers these rooms unique in terms of sound quality and appearance, and compares them to musical instruments, which have a special influence on the kind of music that can be produced. The music syllabus in the Estonian NC specifies four requirements for the physical environment for music education:

The school enables the students to use the following resources: natural piano and piano chair, synthesizer, audio system, board with staves, music stands, shifting quarter note, scale degrees chart, keyboard chart, computer with sound card and Internet connection with notation and MIDI recording software.

The school conducts the lessons in a classroom where students can work in groups and there is sufficient space for movement.

The school provides the necessary instruments (the Orff set of instruments, recorder or 6-string smaller zithers and acoustic guitars) for the students to engage in making music.

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The school allows the students to use its accumulated record collection (CD, DVD, VHS).

These requirements are somewhat inadequate considering the outdated VHS system and classroom requirements, as choral singing, which is part of our national culture and the foundation for the sustainability of Song Festivals, has special needs. The choir classroom usually has adjacent front tables and seats placed on different levels of semi-circular steps so that all the singers can see the conductor and be organised by vocal groups when performing music, but there is also a requirement for writing or reading. Jamerson (2010) has also discussed the "mistakes" made when designing classes for music education (in particular, the size and shape of the room, which influences the quality of sound, acoustic isolation, etc.).

In order to distinguish a music class from other classrooms, it should contain some posters, portraits or busts of famous composers or performers, or concert advertisements, which can also serve as study aids. There should also be shelves and cupboards where instruments, books, notes and other (printed) materials can be stored, and where they can easily be found and retrieved for lessons. How to provide all the required instruments and study materials, and how to arrange everything in the classroom depend on the circumstances, and also on the teacher's competence and creativity. We should also mention that small rural schools usually have no special classrooms for music education, and the lessons take place either in the school auditorium or ordinary classroom.

Research Objectives, Methods, and Procedures

The objectives of the pilot study were to explore how teachers comprehend the opportunities for the design of learning environments needed for music education, and to determine the optimal learning environment for implementing the new music syllabus contained in the NC. The research methods employed were document analysis, questionnaires and focus group interviews.

The following research questions were posed:

(1) How do teachers understand the concept of learning environments and how can they structure them?

(2) What are the study materials they can use today to develop supportive environments for music education?

(3) What would be an optimal learning environment for implementing the new NC?

The empirical research for this study drew on both quantitative and qualitative approaches. A questionnaire (based on theoretical references, curriculum documents, and recommendations from practical experience) for music teachers of general comprehensive schools was compiled and sent to 70 potential respondents. The questionnaire was completed by 34 music teachers (n = 34). The same questions about environments at school were used in two focus groups (n = 6 and n = 5) with student teachers who had been observing school environments and music lessons, and who agreed to share their impressions and observations.

The seven-part questionnaire covered the following topics: learning environments, study materials, classrooms for music education, choirs and ensembles supervised by teachers, the social environment and organisation of lessons, opportunities and challenges of implementing the new NC, and general data pertaining to the respondents.

Discussion

The respondents were all qualified music teachers with an average age of 47.1 years (the youngest respondent was 22 and the oldest 65), and the age of the student teachers participating in the focus groups was

20-22. Answers to open-ended questions were analysed by their general content and most frequently used words/terms, from which two categories emerged: definitions imitating the wording of the NC, and individual definitions providing wider and more general explanations, or citing definitions in encyclopaedias or educational dictionaries. The first question asked the respondents to define or describe their concept of a learning environment.

Respondents defined the term "learning environment" in fairly general terms, e.g., it is the mental and physical environment for lessons; the space where learning takes place; the environment means conditions provided by the employer, etc..

The teachers who were following the NC tended to differentiate between the physical and psychological, and sometimes social environments; some mentioned classrooms and their interior design, temperature, air quality, light and acoustics, technical equipment, and music textbooks and workbooks which provide texts and exercises. The psychological and social environments were mostly described in terms of classmates, teachers, and opportunities for group work. The elements of learning environments were expressed in the following words (frequency of mention in parentheses): classroom (17), study materials (13), studies (8), students (8), school (6), physical environment (6), social environment (4), conditions (3), school administration (3), and psychological environment (3). The aggregated information revealed no systematic approach, and a fairly limited capability to structure supportive learning environments.

The second question asked respondents to specify to what extent learning environments had been discussed in teachers' pre- and in-service training. There were six types of answers, which were usually accompanied by explanation.

(1) Very little (13). Some said that they had not participated in such in-service training courses; others mentioned that different learning environments are required for different school subjects; and some asserted that learning environments are important for teachers when organising music lessons;

(2) To some extent (8). Some reported that learning environments had been discussed in pre-service training in connection with Orff instruments and methods; others said that some in-service training courses had disseminated information about the quality of musical instruments and where to buy them;

(3) Not discussed at all (4). Some teachers described their in-service training as only focusing on subject teaching and general psychology. Don't know (4). These respondents said that they have not participated in-service training courses for a long time for various reasons (time, lack of money);

(4) Widely discussed (3). Waldorf school teachers have widely discussed different kinds of learning environments. Some teachers mentioned courses where they have discussed opportunities for improving various learning environments;

(5) Two teachers were of the opinion that learning environments have been discussed sufficiently.

Such comments clearly show that knowledge and skills for designing supportive environments are not yet considered relevant to music didactics.

The third question asked respondents to specify how the music syllabus and the introductory section of the NC guide or support teachers in the development of supportive learning environments for music education. The most frequently expressed opinions were the following:

(1) The prescribed materials are useful but difficult to obtain, mainly for financial reasons and school administrators' priorities (9);

(2) They are a great help, as they give teachers a reason to buy instruments and establish better virtual environments (8);

(3) They provide clear lists of materials for physical environments, but social contexts are different everywhere and teachers have to decide for themselves.

As the answers show, the teachers' opinions about pre- and in-service training are rather controversial and their comprehension of learning environments as rationally designed and structured systems with specific elements is somewhat vague. Several elements of learning environments are considered meaningful, but they are not organised by function or otherwise.

Teachers best understood the analysis of study materials available in schools. They were asked to specify the number of materials and other study aids required for learning music according to the new syllabus. This revealed considerable diversity among schools: Some schools are well provided with all possible study materials and aids, and there are special rooms equipped for music education, whereas others have to manage with rather poor environments. The problem that most concerns everyone is the lack of money. The same was said about the availability of textbooks and workbooks, but many teachers (19) refused to answer this question.

The question about Internet environments used in music lessons yielded the following information: Youtube.com was the most popular (28), followed by Google (6), Wikipedia (4), Moodle (3), and E-school (3). Grolier.com, Britannica.com, Dropbox.com, Opera.ee, and Myspace.com were also mentioned by some respondents.

The information on social environments was quite difficult to structure and categorise. In this pilot study, we tried to focus on questions which would provide preliminary information about the teachers' workloads and their extracurricular work with choirs and ensembles, the relationships between music teachers and the school administration, as well as class sizes and possible support from parents (the hidden curriculum) for learning music or attending concerts. Other characteristics of social environments were not analysed, including the organisation of the learning process in music lessons.

The data collected from teachers describing their extracurricular work with school choirs and ensembles gave some indications of teachers' workloads and relationships with school administrators. This is of particular significance in schools, where the support of the school administration may be crucial to the success of music education. Twenty-three teachers reported working with choirs of small children (aged 7-12), 11 with children's choirs (aged 12-15), seven with boys' choirs, and 18 with various other ensembles and soloists. Twenty-nine out of 34 teachers reported good support from school administration, which indicates that music education and the work of music teachers are ranked reasonably high in schools.

Information on class sizes shows substantial variety: The number of students per class in basic schools is 24, while at the upper secondary level, no class size has been specified. Class sizes vary between rural and urban schools, in which a class of 13-17 students is considered small; 17 teachers reported working with such class sizes. Eleven teachers worked with classes of 24 students, while 14 reported class sizes of more than 24 students. Teachers considered the size of the class to be an important factor in music education, especially when the students are playing different musical instruments. Parental support was reported by 16 respondents; six reported weak parental support, five reported significant support, and seven did not answer. As social stratification increases, parental support in taking children to concerts and other cultural activities is unfortunately decreasing.

The final question was about the implementation of new NC and possible challenges teachers may encounter. Teachers were asked to evaluate how well their pre- and in-service training was assisting them to reorganise their work according to the new music syllabus. Fifteen teachers reported adequate preparation, whereas 12 anticipated problems with teaching instruments and new study themes in general, the majority of problems being related to the compilation of documents at the school level (school curricula, syllabi and teachers' work plans). A frequent answer was: "I am a good musician but not that good at completing all the required documentation". Thirteen teachers considered in-service training good or adequate, 11 considered it useless, seven expected to find everything on the Internet, and three did not respond to the question. No one mentioned or anticipated problems with regard to designing supportive learning environments.

Focus Group Interviews

Focus group interviews (n = 6 and n = 5) took place in March 2014 with student teachers who had recently finished their practicums, which included an introduction to school administration and management, viewing school premises, and observing music lessons in Grades 5-9. The students were asked to share their impressions and observations about school environments in general and environments for music education in particular. Three schools were visited, all located in Tallinn, the capital of Estonia. The interviews were recorded, transcribed and coded according to the following topics: school premises, music classrooms as environments for music education, and social environments/relationships in the lessons observed.

The student teachers' observations about school premises were all positive; the following are some examples:

My school was a very nice old historical building, designed by a famous architect. The classrooms were not very big, but adequate for 26 students. There was a very nice school hall with good acoustics. And the library was really well equipped with computers and everything.

The school I visited was a new one, built some ten years ago—a bit too modern for my tastes. There were too many open spaces at different levels, but students seemed to enjoy sitting on the stairs. Every teacher had an office, usually shared by two or three colleagues.

My school worked in two shifts, so the classrooms were completely occupied all day. The school had a new stadium and a cosy lunchroom.

Their observations about music classes were mostly positive, but they also expressed some criticism:

The school has two music classes, one for primary school children and the other for senior students. Both were very well equipped—There were some 15 flutes and 5 zithers in the juniors' room, the tables could be rearranged for group work, and there was enough space for movement. However, the books on the shelves looked a bit old. The pianos were good. Both music classrooms had a computer. The room for seniors was a typical choir classroom. Perhaps senior students do not need to move around that much. There was a good record collection.

The music classroom in my school had a really modern sound system—They probably have a lot of money. There were 6 guitars, but there should be more. The school also has two bands, but they had a different room for that. There were also some nice posters. The teacher was a young man—Probably he had tried to make things comfortable in that classroom. The instruments were in locked cupboards.

The music class in that school had all sorts of materials—especially books and notes—and it was a bit disorderly in my opinion. There were materials everywhere, but the teacher seemed to be able to find everything somehow. There was a computer and a piano, of course, but the furniture looked a bit "tired.".

If the classroom looks nice, clean and well lit, it makes students feel less tired.

I think every teacher organizes his or her music classroom in the way he or she considers most rational, so that everything can be found and used easily. The student teachers had many more impressions about the lessons they had observed. The basic things they tried to analyse and evaluate were the atmosphere in the classroom and the activities during the lessons. The student teachers were intelligent enough to note that the number of lessons observed was too small to form conclusions about the situation. However, the following are some interesting examples:

The junior students were as good as possible. They seemed to be trying to "protect" their teacher by showing the guests the very best they could do. And they did sing well; I did not expect such a sound from an ordinary primary class.

When every child is making music, there are no discipline problems. The teacher gave everyone some kind of instrument and they were all happily engaged. I think this teacher only taught primary classes.

I never thought a high school music history lesson could be made so meaningful. Of course, the film clips drew their attention and the music selections were well chosen. However, two boys were silently occupied with their mobile phones during some parts of the lesson, but they did not disturb anybody.

I think this teacher had everything very rationally organised, and the students knew what was expected of them. I understood—a work plan is a clear system of organization, and they probably had agreed on it.

Teacher X supplied many Internet addresses where support material for the presentation could be found, and students were expected to access them as homework. He offered his help to everyone, even during the lunch break. I think students knew they could rely on him.

Conclusion

This pilot study has shown the development of the specifications for learning environments in curriculum documents, but the responsibility for implementing the NC has been shifted to schools and teachers, who do not always possess adequate resources (time, money, competence) to design and develop the most supportive environments for music education. Teachers need specific in-service training for the improvement of their professional skills to more precisely structure learning environments, and to integrate formal and informal settings that could support learning in different ways. Some recommendations can be made for the further improvement of pre- and in-service training by including some new academic and practical courses related to didactics in general and music didactics in particular, which could contribute to the quality of music education. The methods used in this small-scale pilot study demonstrated their suitability for further research and for the development of student teachers' observation and analytical skills, which are crucial to their future profession. Twenty-first century teachers have to be smart and flexible in making the most of different environments to provide support to different types of learners, and to make learning successful and meaningful.

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