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Problems in Music Pedagogy is an international refereed journal concerned with all aspects of music pedagogy. Topic areas include music teaching/learning process in a new education paradigm context, music learning outcomes, assessment in music pedagogy process, music teaching and learning activities, music teacher competence in the context of sustainable development, music education institutional responses to current trends. The journal is committed to promoting excellence in these fields by providing an international forum for the debate and evaluation of a wide range of music pedagogy issues and professional concerns.

The journal aims to publish articles which will contribute to improving theory and practice in the field of music pedagogy.

These articles may variously:

- raise and debate contemporary issues;
- report on new research;
- relate new research to theory;
- relate theory to practice;
- offer informed comment on contextual and professional matters;
- describe cases and their implications for a wider field;
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EDITORIAL

Dear readers,

This number of our journal "Problems in Music Pedagogy" presents quite a wide range of problems identified in music education and comprises the process of music education in pre-school institutions and primary schools as well as in the field of professional music education of different level.

The study of Yun-Fei HSEE (Taiwan) is a step forward in the understanding the involvement of interns in a real working environment of a daycare center in Taiwan. The author of the study confirms the need to expand the opportunities for pre-school interns working in the daycare center along with teachers and specially appointed music teachers. Conclusion of Yun-Fei HSEE has shown that it is a positive influence for the interns to learn from the placements with hands-on teaching experience.

The focus of the study of Minna Mäkinen and Antti Juvonen (Finland) is the exploring of the experience of teachers in the classes one through six using the module of educational practice, which was conducted in the school for training teachers in Joensuu. The aim of the study was to explore the changes that occur in students' attitudes toward teaching music during the teaching practice and find explanations for the changes. Authors stress the fact that in the process of supervision, beliefs and presumptions should be open to consciousness, and, after that, their origins can be explored and contemplated; their relation to general significance perspectives can be interpreted and possibly can form a synthesis with earlier knowledge, thus, molding the knowledge in a new form. An examination of student experiences of the teaching practice module, in general, showed that the study module had produced strong self-reflection, which clearly developed the student teacher's identity and opened new approaches to teaching.

Vita STIĢE-ŠKUŠKOVNIKA & Jeļena DAVIDOVA (Latvia) show the main survey results and give an overview on the principals of vocational music education institutions in Latvia. Authors are focusing on the lower level of vocational education in Latvia, which officially represents institutions of vocation-oriented music education – so called music schools or music and art schools and its principals. As most important knowledge and skills for effective school leader the participants of the survey (80 school principals) mentioned the following necessary knowledge and skills: a) knowledge in financing, human resources, pedagogy, management and music as well as b) leadership, communication, self-development skills and modern teaching and leadership methods. Respondents noted that

they are ready to raise the level of knowledge and skills in the field of finance, management, pedagogy and psychology, since it affects the quality of education establishment management.

The study of Jurijs SPIGINS (Latvia) describes the manifestation of specific individual-psychological factors of effectiveness, namely, musical abilities and their role in the process of practical mastering of improvisator's creative skills. Author stresses that only those students who have ear for music, sense of musical rhythm, musical memory, musical thinking and musical imagination are able to understand regularities of links and relations between elements of musical form. The point is that mastering the fundamentals of musical improvisation consists of learning the theoretical basis of the didactic model for stylistic modeling as well as of the development of theoretical skills of improviser's practical activity.

The aim of the study of Fiona Mary VILNITE & Mara MARNAUZA (Latvia) was to research the development of skill connected to rhythm and intonation in violin playing using mental training in the teaching and learning process of primary school violinists. The main question was: How can mental training be included in the learning of rhythm and pitch on an instrument? Authors stress that the process of mental training deliberately alternates physical and mental practice, and in doing so creates awareness of the mental and physical connections occurring in skill learning. The construction of a student's own mental model of the task at hand appears to be paramount in learning.

I would like to acknowledge the contribution made by all the people involved in the preparation of each issue of Problems in Music Pedagogy. Our journal depends on the expertise and collaboration of authors, editorial board members, as well as managing editor and computer compose matter. I express my appreciation to all of them.

**Editor-in-chief
Jelena DAVIDOVA**

EXPLORATORY STUDY OF THE LEARNING ENVIRONMENT OF YOUNG CHILDREN MUSIC EDUCATION BY EARLY CHILDHOOD CARE AND EDUCATION DEPARTMENT INTERNS

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Abstract

The musical experience at an early stage for infants and toddlers contributes to the development of music intelligence. As the consequence, it is important for the caregivers and parents to encourage the young children to obtain musical experience at the earliest stage of learning. Daycare centers are currently the main stream of childcare for more than 20,000 infants and toddlers aged 0-2 in Taiwan. It is postulated that the Early Childhood Care and Education Department interns may enhance a better music learning experience for infants and toddlers at daycare centers. This is to ensure that the interns who are potentially the future caregivers will possess the minimal music teaching skills to allow adequate learning to take place for infants and toddlers. This is one of the contemporary issues which educational experts and scholars in the field of child care should pay close attention to.

This project is a qualitative case study and aims to gain an understanding of the current situation of the music learning environment provided by the daycare center for infants and toddlers using the in-depth study of the internship of the five-year college students from the Department of Early Childhood Care and Education at Shu-Zen Junior College of Medicine and Management (SZMC) in Taiwan. In addition, this study allows the exploration of the relationship between the effectiveness of music learning of SZMC interns and their pre-entry into the field of teaching for infants and toddlers.

This study concluded that during the period of practice, the interns were able to gain a better understanding of the music learning environment at daycare centers. The understanding would include both the structured and unstructured informal guidance music activities. Interns can get the opportunity to understand and participate in the field of music learning at the daycare centers. The experience also helps interns to examine their basic musical abilities such as singing, playing musical instruments, rhythm creation, body movement and music activity design, as well as their performance in the field of music learning for infants and toddlers.

The results of this study can act as a reference for the music-related curriculum planning of the College's Early Childhood Care and Education Department. This can enable the educators to plan for a long-term follow-up of the effectiveness of the Early Childhood Care

interns and their guidance of infants and toddler's music learning at the daycare centers across Taiwan.

Keywords: *infants and toddlers, daycare centers, music learning, Department of Early Childhood Care interns, music learning*

Introduction

Background

In accordance with the “*Early Childhood Education and Care Act*” (Ministry of Education, 2013a) in Taiwan, the educational service for 2 to 6 year old will be the responsibility of the Ministry of Education, while the oversight of the education and care for infants and toddlers who are under 2 years of age will be provided by the Ministry of Health and Welfare. In recent years, infants’ and toddlers’ education and care issues have been frequently reported in Taiwan. This includes the multiple levels of policy planning for the integration of child care, the establishment of nursery institutions and the construction of the national community nursery system. In addition, the expenditure and subsidy of nursery expenses, and caregivers’ training have been in the national spotlight in recent times.

Furthermore, because of the complexity of family factors for dual-income families and single-parent families, often the parents are unable to provide the resources to take care of children at home; therefore, many infants and toddlers need to be taken care of by external support such as care at community daycare centers. This provision and sociological demand had in the past caused public concerns especially in the modern Taiwan. In order to solve the plight of working families with the child care issues, the Ministry of Health and Welfare’s plan for childcare services for infants and toddlers aged 0-2 have focused on the improvement of three main streams of care: home-based care, institutional and community-based care (<https://www.mohw.gov.tw/cp-88-230-1-40.html>).

According to the statistics from the Ministry of Health and Welfare, by the end of June 2017, there were 743 private and 108 public daycare centers in Taiwan. These daycare facilities provide services for 21,761 0-2-year-old infants and toddlers (Social and Family Affairs Administration Ministry of Health and Welfare, 2017b). The type of institutional daycare centers includes full-day, half-day and temporary childcare. The full-day childcare up to 8 hours a day is the most common. Therefore, the process of growth and the demand of care of infants and toddlers are becoming more and more recognized.

Howard Gardner, a psychologist at Harvard University, proposed “*Multiple Intelligences Theory*” aimed to show that human beings have eight kinds of intelligence. They include verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic, musical/rhythmic, inter-personal/social, intra-personal/introspective and naturalist intelligence. These descriptive intelligences can only be fully realized with proper guidance and learning (Gardner, 1983, 2000; Wang, 2006). In simpler terms, every child essentially has music potential.

According to the statement of the National Association for the Education of Young Children (NAEYC, 2009), the influence of early experience on children’s development

will become more obvious over time. It proposed that proper music education can improve the physical fitness, social capabilities, emotions, aesthetics, intelligence and language development of young children (Copple & Bredekamp, 2009). American music education scholar Edwin E. Gordon (2003) also produced a similar statement. He believes that children from birth to 9 years old are at an important stage in which the development of music potential, through the caregivers and parents' structured or unstructured informal guidance, and/or with the music teachers' formal instruction, can enhance children's music experience, and musicality (Gordon, 2003; Rauscher & Hinton, 2011; Kim, 2013; Gordon & Brown, 2013; Liu, 2016). Therefore, music learning can be regarded as an indispensable part of the growth process of infants and young children (McDonald & Simons, 1989; Ilari, 2002; Gordon, 2003; Nardo, Custodero, Persellin & Fox, 2006; Hallam, 2010).

Scholars also found that the caregivers often use music activities to interact with young children at daycare centers (Vannatta-Hall, 2010; Kim & Kemple, 2011). Both the caregivers and music teachers are equally effective in enlightening young children's music learning and development (de l'Etoile, 2001; Nardo, Custodero, Persellin & Fox, 2006; Vannatta-Hall, 2010; Hsee, 2011; Young, 2016). Since infants and toddlers are in daycare centers for a long period of time in Taiwan, caregivers need to be equipped with professional knowledge and training in order to guide infants and toddlers' daily routine and activity designs.

Today, Taiwan's higher education systems for training the care providers of young children include the four-year Early Childhood Education Department of university and the five-year Early Childhood Care and Education Department of a junior college. Each educational institution will have their own curriculum by ensuring that students have enough experiences in practicum before graduation. However, the questions we ought to ask are:

- *Do the daycare centers in Taiwan provide adequate opportunities for music learning or music-related activities for infants and toddlers?*
- *Do the Early Childhood Care and Education Department interns have the minimal music skills to guide infants and toddler's music learning during their internship?*
- *What is the current performance of Early Childhood Care and Education Department interns at the internship field?*

There is no clear research discussion on these topics yet.

In summary, the musical experience at an early stage for infants and toddlers contributes to the development of music intelligence. As the consequence, it is important for the caregivers or parents to encourage young children to obtain musical experience at an earlier stage of learning. Daycare centers are currently the main stream of childcare for more than 20,000 infants and toddlers aged 0-2 in Taiwan. It is postulated that the Early Childhood Care and Education Department interns may enhance a better music learning experience for infants and toddlers. This is to ensure that these future caregivers will possess the minimal music skills to allow adequate music learning to take place. The experts and scholars in the field of child care should pay close attention to these contemporary issues.

Study purpose

Based on the above research background, this study aims to gain an understanding of the current situation of the music learning environment provided by the daycare centers for infants and toddlers using the in-depth study of the internship of the five-year college students from the Early Childhood Care and Education Department. Furthermore, this study allows the exploration of the relationship between the effectiveness of music learning in school of the interns and their teaching for infants and toddlers at daycare center.

Questions

Based on the summation of the research described, this study explores three issues:

1. *What is the current music learning environment provided by the daycare center?*
2. *How do the Early Childhood Care and Education Department interns perform in the infants and toddlers' music learning environment at the daycare center?*
3. *What is the relationship of the Early Childhood Care and Education Department interns' musical training at their educational institution and their performance of music teaching at the daycare center?*

Methodology

This project is a qualitative case study (Yin, 2003). The researchers conducted in-depth study on the interns from one of the junior colleges with an early childhood education program training in Taiwan. Data were collected retrospectively through observations, video-taped teaching sessions, field notes, interviews, and internship logs. Data were then conformed to descriptive processing and inductive analysis.

Research Field

The field of this study is an agreement between the institutional care (daycare center) internship and the Early Childhood Care and Education Department of Shu-Zen Junior College of Medicine and Management (SZMC), Kaohsiung, Taiwan. The daycare center must fulfill the following criteria: government approved daycare centers with full-time nursery care for infants and toddlers enrollment aged 0-2 years, the director of the unit and the caregivers agree to carry out this study, the parents or guardians of infants and toddlers consenting to their children being observed, and have interns allocated from SZMC Early Childhood Care and Education Department.

After fulfilling these criteria, the Hope (anonymous) Daycare Center was selected. It was officially registered by Kaohsiung Social Bureau. The center was established in 2011 and has more than 413.23 m² of activity (including outdoor) space. The center is expected to provide a learning environment for children with the spirit of M. Montessori education method by utilizing the concept of love, care and respect, combined with life ability and educational opportunities. Nine qualified caregivers were staffed at the center. This center currently enrolls 32 young children aged from 4 to 34 months. A total of 6 interns were assigned to each class according to their age in lamb class (4-12 months), calf class (12-24 months) and elephant class (24-34 months). Based on the *Standards for Establishing Children and Youth Welfare Institutes* (Ministry of Education, 2013b) in Taiwan, the nursery/daycare centers can routinely offer nursery services to

children under 2 years old (infants and toddlers). Some of the nursery centers, which have already enrolled children under age of 2, can apply for a continual care of these children, not exceeding further one year in age before moving on to the next stage of early childhood schools. This is in accordance with the provisions of *Early Childhood Education and Care Act* (Ministry of Education, 2013a). Therefore, in our study, the children who are 24-34-month-old (under 3 years of age) were included in the study.

Participants

Hope Daycare Center promotes opportunities of music learnings for infants and toddlers. A fully qualified music teacher is employed to spend three separate half an hour periods with the three groups of children of different ages. In our study, there participate 6 interns, who are on the last year of a 5-year Early Childhood Care and Education degree program at SZMC. They received credits for various music courses. All of the interns completed a 4-week rotation. Two interns were assigned to each of the 3 classes with different age children.

Limitations of the Study

The current study is limited to only one daycare center with SZMC intern placement. The powers of the study and sample size were small. Therefore, it may not be able to represent the daycare widely. In addition, the interns involved were only from SZMC, a single educational institution with a robust early childhood education program. It is difficult to relate to other institutions' practicum curriculum.

Results

Research question 1: What is the current music learning environment provided by the daycare center?

The researcher reviewed the daily schedule at the Hope Daycare Center and spent time observing the teaching sessions. Teachers' instruction plans and teaching records were made available for this project. Hope Daycare Center is very well equipped with many modern music activities specifically for learning processes. These music activities conform to the E. Gordon (2003) principles of structured and unstructured informal guidance:

- A constructive music learning program where teachers or parents are heavily involved in the theory and curriculum;
- Minimizing of planning and structuring which allows young children to learn with musical spontaneity.

These two principles have one common goal: to allow young children to learn music in a non-threatening environment.

A. Music Teacher's structured informal guidance music activities

Hope Daycare Center has appointed a music teacher H, who received her qualifications in the United States. The music teacher instructs on a 30-minute weekly basis in the three classes using the structured informal guidance principles. Her teaching materials evolved from her previous experience. The songs and music used were in English.

Before the commencement of the teaching sessions, all the tables and chairs were removed to allow the music teacher and the children adequate space for teaching. The music activities included: singing, listening to music, playing instrument, free movement and chanting by using egg shakers, tambourines, triangles, drums and wood blocks. The genre of music is variety such as jazz, folk music, traditional children's song and pop music.

During the informal guided music activities, the music teacher will encourage the children to pay attention to her with eye contacts and individual interactions but will not force any child to imitate or follow her instructions. Some children would involve in the activities, some were sitting and staring at the music teacher or ignoring music activities.

B. Caregivers' unstructured informal guidance music activities

Hope Daycare Center has three classes. Each of the three classes has 3 licensed caregivers. Every day the learning schedules were planned and discussed. According to researchers' observation and internship logs, there were many informal music learning activities. These activities allow the infants and toddlers to mix and mingle with music learning naturally.

The caregivers use instruments to make sound to ensure the infants and toddlers pay attention. The children would fix their eyes on the instruments and caregivers. Also, the caregivers would often change the lyrics of nursery rhymes to improve the level of communication and to enforce impression and memories. Moreover, the caregivers played music CD songs to inform children about the change of their scheduled activities. In order to help them to develop good learning habits, the daycare center arranges different work schedules in accordance with the age group. When changing the learning activities, the caregivers play music songs to remind infants and toddlers to prepare for the next event.

Research question 2: How did the Early Childhood Care and Education Department interns perform in the infants and toddlers' music learning environment in daycare center?

In this research study, there were 6 interns from SZMC allocated to the Hope Daycare Center. Through on-site observations, interviews, analysis and induction of internship logs, the 6 interns participated in the structured informal guidance music activities led by a music teacher and unstructured informal guidance music activities led by the caregivers. Here are the summaries:

- The interns have abilities to initiate various types of musical activities. These include participating in the sessions with the music teacher and the daycare center caregivers.
- The interns in the structured informal guidance activities participated in non-musical interactions with children. One of interns mentioned that she lacked familiarity with the music teacher's music plan; therefore, she turned her attention playing with the children instead.
- There has been a lack of confidence from the interns in their ability to perform music at the daycare center. The interns were all well trained but did not perform as well as expected.

- The interns were able to observe and learn from the music teacher at the structured informal guidance activities. Although the interns were not informed of the lesson plan beforehand, they were able to learn quickly on the spot and follow suit.
- There were two interns who did not get involved in the structured informal guidance music activities with the music teacher. They felt the music teacher's music lessons were exclusive; therefore, they had no role in the participation.
- When the caregivers were to start a music activity by playing a tune or singing a song, the interns will remind the children to pay attention.
- The interns imitated the caregivers' musical interactions or musical activities. Once the intern became familiarized with the routine of the daycare center, intern will initiate the change of classroom sessions by playing the routine CD.
- The interns will initiate music activities in the daily routines at the daycare center when the caregivers were busy. This is often done by changing the lyrics of some familiar nursery rhymes to encourage children's participation.
- The interns understand the importance of music activities in the interactions with infants and toddlers. However, it was less clear for the interns to understand some of the reasons for the caregivers' music interactions using certain methods even though these methods in practice could also be beneficial for children's music development.

Research question 3: What is the relationship of the Early Childhood Care and Education Department interns' musical training at their educational institution (SZMC) and their performance of music teaching at the daycare center?

The study consisted of six Early Childhood Care and Education Department interns at the Hope Daycare Center. These interns had the same music courses in college (SZMC) including keyboard music, percussion, movement, and children's instrumental music and teaching as well as passing piano test and final performance. Thus, all interns have the basic musical abilities such as singing, playing musical instruments, rhythm creation, body movement and music activity design. Following the review of our data, the relationship of interns' musical training at the college and their performance of music teaching at the daycare center are:

- The interns are knowledgeable with many instruments and performance techniques which they acquired at the college. This would equip them with the basic teaching tool to interact with infants and toddlers in both structured and unstructured informal guidance music activities.
- The interns had the opportunity to observe the daycare center caregivers' and music teacher's methods and style of music teaching. The music courses at the college allow them to gain the basic understanding of the teaching principles utilized by the caregivers and music teacher.
- The interns' musical skills are sufficient to use freely in the daycare center. They are proficient with many music activities and are able to modify the lyrics and songs to suit the teaching environment.
- The interns have had basic training in piano and singing accomplishment but they lack real-time experience in teaching. At the daycare center, there were no large music instruments such as piano; therefore, some of the intended activities which the interns could facilitate did not happen.

- There was a clear lack of confidence from the interns. They were worried since their performance at the daycare center was being marked and graded. Therefore, they were over-cautious, and some have decided not to participate in music activities.
- The interns all exhibited music teaching potentials, but they lack experience in leading and promoting music teaching to infants and toddlers. It was difficult for the interns to blend in the teaching group at the daycare center as they were unfamiliar with the routines and the center's teaching principle. As the result, some of the children had not concentrated well at the music lessons.

Conclusion and Suggestions

The conclusion from this study of allocating SZMC college interns to participate in the teaching of early music education at a government approved daycare center is as follow:

1. The internship experience allows the in-depth understanding of various music teaching components of daycare center in structured and unstructured informal guidance techniques. The interns were exposed to observational activities and participating in music lessons. The interns had the opportunity to observe a music teacher using teaching techniques from the United States to engage music in traditional methods and other related interactions. The teacher used body language and eye contacts with the infants and toddlers to make the teaching more effective. The daycare caregivers used planned and unplanned lessons for the children. This was effective in a sense of spontaneity and allows the infants and toddlers to learn in their natural environment.
2. Participating in the study, often the infants and toddlers would follow and imitate the instructors in their learning. It was also often observed that the infants and toddlers were attracted to a specific type of music and musical sound. There was also documentation of non-music-related interactions with the interns which include touching heads or holding hands. The interns often reminded the children about the presence of music and made the experience of music teaching more positive and engaging.
3. The interns have had four years of music trainings prior to be allocated to this teaching experience. They are all proficient with various instruments and teaching techniques. The interns were flexible and versatile in the daycare center. They blended well with the existing music teaching and were able to be independent at selecting their own teaching material. However, the lack of some large instruments at the daycare center, such as the piano, was a minor issue where the interns were not able to fully utilize their teaching potential. In addition, although the interns were well equipped with theory and teaching tools, it was observed that they lacked confidence at teaching and interaction with children. This was particularly evident in the early stage of attachment.

In our overview, the study took a step forward in the understanding of placing interns in a real-life working environment of a daycare center in Taiwan. This study allows us to further progress the possibility of early childhood education interns working in the daycare center along with daycare center caregivers and specialty appointed music teachers. Our conclusion has shown that it is a positive influence for the interns to learn from the placements with hands-on teaching experience. It is proven that for infants

and young children, music learning and exposure to it are at a most important stage of development. Therefore, it is important for the educators and policy makers to be made aware of the importance of having a proper learning environment and appropriate training for the care providers. Furthermore, from the intern perspectives, the experience allows the students to gain early teaching experience and environmental exposure. This also encourages self-reflection and independent learning. The author hopes this study will encourage educators, parents and early childhood care providers to further explore the endless possibility of improving early child music education in the future.

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"IS IT POSSIBLE TO CHANGE THE SUBJECT?" CLASSROOM STUDENT TEACHERS' EXPERIENCES OF TEACHING PRACTICE AND ITS SUPERVISIONS

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Abstract

Our research explores teacher education students' experiences of the teaching practice and supervision that they receive during teacher training. We also asked the students for ideas about developing the music education module in teacher training at the University of Eastern Finland (UEF) (N=21). The data were collected during 2014-2018 in a teaching practice H2-study (elementary classroom practice) module. The teacher students responded to open questions in writing. All respondents are anonymous in the data.

The results show that the teacher students can be divided into three categories according to their attitude towards teaching music during the teaching practice module: Enthusiastic, Hopeful but qualified, and Fearful and qualified. The categories were analyzed separately, but the results were collected in general exploring. It shows that the teaching practice module functions well, and the students are satisfied with the supervision they receive for the most part. Each student felt that their self-assurance and self-confidence in teaching music was significantly enhanced. The students' ideas for developing the teacher education music courses largely focused on the extent of the courses and the number of optional courses and music theory lessons.

The teaching practice clearly succeeded in changing the prejudices of students and their meta-cognitive beliefs about themselves. These changes are based on significant experiences in teaching practice. The changes in significance relations impact changes in behavior and operations and, in this way, strengthen teacher identity and self-understanding.

Keywords: *teaching practice, supervision, teacher identity*

Introduction

In this article, our focus is on exploring and opening classroom teacher students' experiences of the teaching practice module, which was carried out at the Joensuu teacher training school. The data were collected during an H2 practice module in 2014–2018. The module was carried out in classes one through six. We asked students to

write about their experiences and emotions by freely responding to the following open-ended topics:

- Feelings before the teaching practice module (fears, expectations, joy, preparation, etc.);
- Thoughts and experiences during the teaching practice module (co-teaching with another student, personal skills and abilities, planning, etc.);
- Observations after the teaching practice module had been completed (strengths and weaknesses, etc.);
- How to develop challenging areas?
- Experiences of supervision (offered by teacher training school lecturer and university music lecturer);
- Ideas for developing the teacher education's music courses. We received responses from 21 students (19 women and two men).

The responses were written during the students' free time and were returned without identification information.

Content analysis was used to analyze the data. We classified the responses using the same classification criteria as we used in earlier studies (Mäkinen & Juvonen, 2016, 2017; Mäkinen, Eronen & Juvonen, 2018). The students were divided into three categories according to the attitudes and beliefs they expressed before the teaching practice module. The categories were:

- "Enthusiastic" (six women);
- "Hopeful but qualified" (eight women);
- "Doubtful and fearful" (five women and two men).

In our earlier classifications, there was a category named "Others", but in the present data collection we placed all the students in the three categories listed here.

H2 Teaching Practice Module Curriculum 2014–2018

The objective of the H2 teaching practice module is to guide students in using the curriculum as a supervising document. They are expected to plan the teaching period for 10 music lessons so that it includes evaluation. The content for the period is given by the first supervisor, teacher at the practice school. Different teaching methods must be used variably concentrating in each school subject's special features and qualities. Students are supervised to collaborate with each other in a multi-professional way. Lessons are also carried out on a teaching-team principle. The student is expected to be able to differentiate their teaching according to pupils' skill and ability levels considering their special needs and requirements.

Practicing the basics of teaching (H2) takes place normally in the third year of studies, when the student has carried out all offered art and skill studies (Study modules Tata 1–3) and certain pedagogical studies. In the teaching practice module, the students teach 23 lessons, of which 10 lessons in art and skill subjects. The rest of the lessons consist of teaching how to read and other elementary school subjects. The module also includes classroom observation of which 27 music lessons. In addition to this, the students become acquainted with so-called outside school activities for 6 hours (in the

year 2014, this was 10 hours). The students receive altogether 30 hours of supervision of which 10 hours of big group supervision, and the rest is small group or individual supervision. The supervision is carried out by a university lecturer and practice school teacher. In addition to a practice school lecturer, a university lecturer and other students observe the lessons. These persons all offer feedback to the student about their lesson, which helps him/her in developing their teaching skills.

The self-reflection about own teaching practice and professional development was provided in the closing report, which was collected during the study module and given to the supervising teacher, who either accepted the report or asked the student to improve and make some additions to it if needed. The whole practice module is evaluated as pass/fail. The module is worth 7 credits. The H2 teaching practice is carried out simultaneously with the module *Planning, Carrying out and Evaluating Teaching and Learning* (3 credits). This module together with *Teaching Training Study* module (H2) form the entity called *Basics of Teaching* 10 credits (270 hours of work).

The Goals of the Teaching Practice Module and Supervision

The teacher education is an entity of pedagogical processes intended to develop the teacher identity of future teachers (Väisänen, 2003, 132-146). Some of the essential parts of teacher education are formed by the teaching practice modules and the included supervision. Teaching practice with supervision has been found to be significant in molding the professional practices of a teacher. The assignment for the supervisors is to model the teaching and to support and guide the student and thus promote the professional growth of the student in the spirit of equal dialogue. Colwell (1998) and Fullerton (1998) have outlined supervision as a voluntary and dynamic interaction relationship that is also intensive and long-lasting. Confidentiality and mutual respect are strong elements of the supervision process. Although supervision in teaching practice is informal support from a more experienced specialist to an inexperienced student, it still has the characteristics of a master - apprentice type learning process (Anderson & Shannon, 1988, 40; Väisänen, 2003, 134; see also Nevanen, Juvonen & Ruismäki, 2012) (See Figure 1).

The supervision can be understood as a psycho-dynamic process in which the key components consist of paying attention to the inner world of individuals, mental images, values, attitudes, and conceptions of knowledge and conceptions of learning, all of which represent students' world view. All actions that are intended to develop the professional skills and professional growth of a student can be considered as supervision. The supervisor's personal working theories are reflected in their supervision and operations (van Deurzen-Smith, 1988; Oberg, 1989, 145-161). The supervisor cannot necessarily separate his/her own knowledge from life experience, instead, learning often takes place through the significances that students give to their own experiences.

A constructivist learning theory is behind the supervision. According to this theory, learning is the result of the activity of the learner. The theory emphasizes comprehension. The role of social interaction is central to all learning. At the same time, learning is tightly connected to context, content, and the learning situation. The supervision aims at deepening comprehension and increasing critical thinking to

remove the rigidity and repetitive false routines in teaching practice (Jyrhämä & Syrjäläinen, 2009). Self-reflection is one of the targets of supervision; the student learns to recognize their own thoughts and emotions that are formed through significant learning experiences (Silkelä, 1999).

The action in teacher education generally aims at controlling problems and developing the work in a positive direction while simultaneously strengthening the self-esteem and self-confidence of the students (See Picture 1). The best way to reach the target is with an investigative working method (Ojanen, 2003, 122-131.) Spiritual growth requires a changing process that is based on self-reflection and becoming conscious of ways of thinking, when the instinctive and conscious thinking unite in the changing process which builds on comprehension. When the metacognitions of a student (the consciousness of one's own knowing) improve, he/she recognizes their own emotion-based beliefs (Ojanen, 2000, 26-30).

From the constructivist point of view, a human being tries to understand new information based on earlier existing knowledge, emotional connections, and social structuring of the information (See Figure 1). A socio-cultural background helps the individual to understand information that the learner constructs themselves based on previous knowledge and on what his/her experiences and expectations are. The learner adapts new learning experiences by reflecting on an earlier significance perspective, which promotes the comprehension that takes place later. The received information, earlier personality-historic experiences, mental images, presuppositions, world view, and awareness of own thinking have an impact on learning. The individual's value-decisions guide the valuation of scientifically not proven meta- cognitions (Von Glaserfeld, 1995; Hoskins & Stypka, 1995; Ojanen, 2000, 39-47).

In the process of supervision, beliefs and presumptions should be open to consciousness, and, after that, their origins can be explored and contemplated; their relation to general significance perspectives can be interpreted and possibly form a synthesis with earlier knowledge, thus, molding the knowledge in a new form.

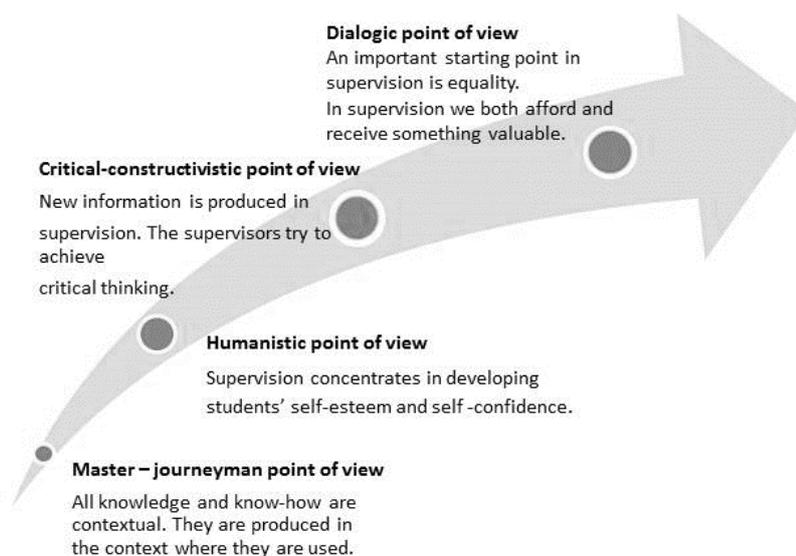


Figure 1. Teaching practice module's viewpoints of supervision

The individual collects information spontaneously in active learning, which requires metacognitive preparedness and entails the ability to control one's own learning. Active learning means searching for new information, it's comparing to earlier knowledge, and reflecting aware of own thinking. Learning by doing is one part of active learning, but it also includes the potential for trying new sides of one and to setting new goals. This requires the ability to process information and see the significance of the activity. It is also important to be able to act in a group, where discussion, listening, and exploring together accelerate active learning. Problem-based learning is based on the support of a small group and forms a broad-based professional approach (Amundson, 2005).

Experiences are Given a Significance

Experiences are an individual's personal handiwork that includes significances that no one else can thoroughly understand. They belong to the individual's psychic and subjective world view, and they cannot be seen or heard; they are only understood (Silkelä, 1999). These experiences are not conscious, they have become like a daily routine, which is not under conscious investigation.

Significances are based on an individual's earlier personal world of experiences. The individual's worldview is enriched and broadened through new significance relationships. A human being tries to understand his/her experiences when matters gain significances. This happens all the time when we gain experiences from different issues that form significances. When a happening gains significance, it becomes an experience. Significance relations are connected with different targets, and they form broader significance schemes that keep changing in interaction with other individuals in different operational environments. Interaction between human beings also creates significances. The significances change through learning as the individual reflects on his/her own experiences. This leads to a better self-assertion and a better interpretation of reality. At its best the interpretation leads to understanding the phenomenon, adding a consciousness of the opportunities available to the individual (Ojanen, 2000, 132-134).

According to Dewey's (1951) well known idea "learning by doing", one learns through experience. The knowledge cannot be separated from genuine experiences gained in real life. When information becomes conscious, it joins learning with personal development. All learning is always in relation to earlier experiences, which means blending into an individual's uniquely, through life experiences developed, worldview. The personality of an individual is the result of his/her life's experimental history, which defines the content of the following experiences and the individual's relationship to the world. Learning expands the connections of an individual's understanding, which mold his/her personality (Kotkavirta & Nyysönen, 1996).

Resistance to learning may occur, which may block the learning process and the process of change. This may be based on earlier events and the socio-emotional nature of the learning process in which learning is supposed to take place. An experience is usually connected to many types of experiences and beliefs, because earlier experiences are not the only truth about the accidents, it is rather how the individual experiences the matters in the moment and in the situation. In certain way, these experiences form a process-like continuity from the individual's past to their future. Mental images, associations, emotion, values and attitudes, and needs are connected to thinking,

experiencing and its content, although it is normally unconscious. The growing and learning process which is based on experiences is closely connected to those significances that individuals give to their experiences, thus, building the unique experiential world of living. Experimental learning is always built on prior knowledge and experimental history is always built on its significances. Learning is most effective when we openly meet and explore problematic experiences (Ojanen, 2000, 100-105). If some part of the cyclical learning process is left poorly handled, learning is not efficient. If the new understanding gained through experiences is integrated to individual's understanding world as a part of his/her operating theory it will change his/her significances, which afterwards should be carried out in practical level. Experimental learning requires practical and unsolved personal problematic experience that is explored and reflected on to find new ideas. This kind of critical self-reflection organizes the significance schemes and perspectives and clears them, after which the changed perspective encourages and inspires the students to new experiments and testing new action models (Ojanen, 2000, 97-109). Earlier experiences may effectively block the ability to self-reflection.

Applying Kolb's (1984) theoretic model, the pedagogical process of supervision proceeds in phases. The supervisor should encourage the student to gain experiences through their senses and avoid assessment. Certain details pop up after a chronologic examination of the practice lesson. Going through personally important experiences together in a group creates processes for new ideas. In the contemplation phase, the emotions and thoughts stirred by the experiences are reflected. In the reassessment phase, new information is merged with old through association. Simultaneously, significant information is separated from insignificant information. The information is tested and tried in practice before new information can be assimilated. When the emotions from the experiment and new ideas are connected to prior knowledge, it is time to make conclusions and test them in practice. A change in significance perspective occurs when he/she have been integrated new ideas as a part of the individual's value-world, which can be seen in behavior (Ojanen, 2000, 113-130).

The target of self-reflection is self-assertion, which forms the core of the spiritual development of a human being. We use it as a means of familiarizing our personal experiences in interaction with ourselves and the surrounding world and reality. Reflection requires openness to anything that an individual find in himself/herself through profound contemplation. Therefore, the issues start showing in a new, different light. According to Boud, Keogh & Walker (1985), three phases can be separated from the self-reflection process: remembering the experience and self-critical exploration of it, recognizing the emotions arising from earlier experiences and re-evaluation of the newborn experience, its activity, thoughts and emotions. Self-reflection is a central element in professional growth (Ojanen, 2000, 71-85).

Operating Theory

Operating theory can be defined as a system that is built on private, personal experiences, knowledge, values, and attitudes that form the bases for an individual's behavior. Experiences function as building material for an operating theory. Operating theory is a set of rules and a guiding system that works in an individual's unconscious area of the brain. One goal in teaching practice is that the student develops his/her

operating theory. Operation theory can help in trying to understand a student's own beliefs concerning teaching and learning, preconceptions, fears, expectations, hopes, and routines of behavior. Professional skills develop when critical self-reflection merges with experimental learning.

The supervisor tries to help and support the student and asks questions and makes observations that can help the student to process their own inner issues and experiences. One target is that the student creates his/her own operating theory, which enables effecting their own working methods and changing them when needed (Ojanen, 2000, 8-93). During the process, the supervised student changes his/her experiences through reflecting on his/her significance world. It is possible to change ways of action through becoming conscious of significances and increasing understanding. The aim of supervision is to change the role of the student from mere receiver of information to information producer. The aim of the process is proceeding through reflective supervision to become conscious of issues and to understand them (Ojanen, 2000, 140-160).

Evaluation of Supervision

One challenge in evaluating supervision is finding usable information in new connections. Evaluation is the most critical and reflective when it aims at an individual's own activities and reveals hidden significances behind every day self-evidences (Ojanen, 2000, 168-170). An important role of supervising a student teacher is evaluation from other students, which takes place in group situations as a process of interaction and common learning. The evaluation process targets supporting the development of the student's self-image. The humanistic concept of humankind and the experiential-constructivist concept of learning lead to motivating evaluation instead of competitive evaluation.

It is important to remember that the supervisor's own values, attitudes and preconceptions, beliefs, and conception of humankind impact the whole supervision process and his/her actions, at least on the unconscious level. Becoming conscious of this helps to illuminate the supervision process. An elementary part of the supervision process is integrating learning and other personal development in molding experiences through self-reflection creating experiences to learning experiences. Learning takes place in a dialogue after an experience and in giving significance to experiences than in the experience itself (Laine & Malinen, 2008).

The Research Questions

Our research questions are:

1. *What kinds of feelings teaching practice in music education raises among classroom teacher students*
 - *before the study model started?*
 - *during the study model?*
 - *after the study model?*
2. *How could the students develop themselves in areas that are seen as challenging?*
3. *What was the supervision like?*

4. *How should we develop classroom teacher education's music education study models?*

Our aim was to explore the changes that occur in students' attitudes toward teaching music during the teaching practice and find explanations for the changes. Through the questions about supervising, we aimed to develop further the processes and the contents of it. We also tried to map the areas that the students find the most challenging in teaching music. We will use these to develop better teacher education music education study models.

Methodological Solutions

We used theory leaning content analyses to analyze the student responses (N=21). First, we created a general overview of the students' feelings before, during, and after the teaching practicing study module. After that, we followed the changes in the students' emotions and attitudes through the three phases (before-, during-, and after the practice module) using typical examples of student texts. Then we created a view of matters that students experienced as the most challenging in teaching music and in students' thoughts about meeting the challenges. In the end, we opened the students' experiences of teaching practice and the areas that were the most difficult. We also present student ideas for developing the teacher education's music education study modules.

Results

A. Student feelings before teaching practice

In our earlier articles (Mäkinen & Juvonen, 2016, 2017; Mäkinen, Eronen & Juvonen, 2018), we have explored student willingness to teach music and belief in their own skills in teaching music. These articles produced a four-class classification of willingness to teach music: 1) "Enthusiastic", 2) "Hopeful but qualified", 3) "Doubtful and fearful", 4) "Others". In earlier articles, there were students who did not describe their thoughts of surviving teaching music at all, and they were put in the category "Others". In this data, there were no such responses, so the category "Others" was deleted. There were six women in the category "Enthusiastic," eight women in the category "Hopeful but qualified," and seven (two men and five women) students in the category "Fearful and doubtful".

The responses, given in the category "Fearful and doubtful" (N=7), showed deep fear of teaching music. The reason for the fear was most often the thought that the teaching student's own skills in different areas of music were inadequate or did not exist at all. Their conception of their own musicality or musical abilities was unstable or totally negative. These kinds of concepts have usually been formed during early childhood at home, among peers, in kindergarten, or at school after negative experiences with music. Changing this sort of conception in adulthood is difficult. In addition to this, many teacher education students shared the notion that they should be able to master all possible areas to be able to teach music, at least at some basic level. Evidently, music is a school subject that touches the students deeply and in which they have built themselves a major threshold for their own activity.

"When I got to know that music was my practicing subject, I burst out crying... I did not feel I had the required knowledge and skills to teach music" (Woman 22);

"...my thoughts about teaching music were not at all positive because I did not feel music was in my comfort zone. I was afraid teaching music would be too challenging for me" (Woman 22);

"When I heard that my other responsible area was music, I was horrified in the beginning" (Man 22);

"The disappointment changed to despair when I got to know the subjects I was going to teach. They were music, religion and mother tongue... Music is a strange subject to me. I am not musical, and I find it very difficult to throw myself in the action" (Man 27);

"...teaching music as a thought was very frightening" (Woman 23).

Students, in the category "Fearful and doubtful", strongly leaned on supervisors from the school for the teaching practice and the university. The supervisors succeeded in offering the students feelings of safety and knowing that help is near and always available. They also experienced spiritual growth: *"I experience that during the fall I grew spiritually as a human being and a teacher. My teacher identity developed, and I can now observe more issues and pay attention to problematic areas"*. The students also speculated on the significance of music to themselves and to their pupils: *"Music may be a means of self-expression to some pupils. I see music as a very important subject, and I would like to offer the children a positive picture of music and its versatility"*.

The writings show that the students had explored the significance of music education more widely, too: *"Sometimes I felt that the pupils did not appreciate music, and that it was only a mandatory subject, which cannot even cause a repeat of a class. Here is a place for thinking in the practice school: why do pupils feel music is an unnecessary subject?"* A strong feeling of self-reflection was present in all of the student responses.

The category of "Hopeful, but doubtful" (N=8) wrote fearfully, but they still had a positive belief in their own survival, in spite of a lack of skills or abilities.

"Before the teaching practice, I was nervous mostly because I had no earlier experience of teaching music.

The conception of a modern music lesson was a little bit lost on me. On the other hand, music as a school subject seems to have expired widely compared to my own music lessons at school" (Woman 23);

"The teaching practice with its evaluation did not make me nervous, but I was not super enthusiastic about it. I am a rather self-critical person, and I already had the attitude "I can do nothing." It partly helped me with my nerves because I really don't know anything theoretic in music" (Woman 23).

The responses from the category “Hopeful, but doubtful” strongly mirrored experiences of success. Respondents often felt their skills were good enough to teach music. The responses also underline the significance of positive feedback from the supervisors. The students felt that their skills had developed a lot in different areas during the teaching practice module. They had also noticed that there were areas that are more challenging and presented their own ideas for developing their teacher identity in these areas. Experimental learning was also strongly present in student responses. The students were satisfied with the supervision they received in almost every response: *“The supervisors helped me to realize areas where I have a lot to develop. They were supportive and helpful to us. It was nice that they were aware that music was not our strongest area”*.

The category “Enthusiastic” (N=6) highlighted in their responses strong trust in their own skills and love of music itself.

“I waited eagerly planning and carrying out music lessons. I have always loved music and liked music lessons. I especially love singing. I felt very lucky when I heard that my teaching practice module included music lessons” (Woman 45);

“I was rather self-assured because I have a lot of experience and some useful material for teaching music ... Just because I have these musical skills I suppose that the teachers expect more from me than the other students” (Woman 22);

“I am glad that I may teach music because it is close to my heart” (Woman 21);

“I was a little nervous, but, on the other hand, my feeling was enthusiastic because music is a pleasing subject for me and my greed for developing in the area of music was strong” (Woman 23);

“Because of my own background (piano course 3/3 done) the thought of teaching music was not horrifying; I was rather excited to be teaching a subject so important to myself” (Woman 21).

In the “Enthusiastic” category, the students observed their own development and winning themselves, which indicates strong self-reflection. They also noticed that they are not supposed to perfectly control each small detail. Their self-confidence could be enhanced along with successful singing and piano playing performances: *“I got rid of my stage fright and developed a lot as a teacher”*. Self-reflection was strong: *“I believe to be able to evolve further in these, still developing issues and observed areas, when I get more experience of teaching music and dealing with children”*. Members of the category also observed the supervision more sharp-eyed than the other categories: *“Positive was also that in the feedback discussions and supervision situations, the focus moved from only teaching situations towards my own habitus and how to put my soul into teaching”*.

B. Student feelings during the teaching practice module

It seems that after initial nervousness and when the teaching practice had got off to a smooth start, the fears of the students disappeared as belief in their own skills and abilities grew and became stronger. The experiences from coeducation with another student were almost all positive, and the students realized that they did not need to master all areas of music to be able to teach good music lessons. They also noticed that mistakes may occur, and that they can learn also from them. In the category "Fearful and doubtful" the change in attitude was quick.

"When the practice went further, my nervousness and fear gradually disappeared... Planning the lessons was, in the beginning, really difficult, but with time it also became substantially easier... I noticed that I gained a lot of confidence in teaching music" (Woman 23);

"After initial clumsiness, teaching music started to feel very pleasing... My own skills were growing along with repetitions and growing self-confidence" (Woman 39);

"My fears of teaching music melted away and every now and then I even enjoyed it. I developed a new kind of respect for music teachers" (Man 27);

"...after getting rid of early clumsiness, it was easier to choose contents and ways of working for the lessons" (Man 22);

"During the teaching practice, my opinions about teaching music totally changed. You don't have to know everything about music right away even if you are teaching music. Different working methods also offer many opportunities to teachers who are not at their strongest area in music" (Woman 22);

"I noticed how my thinking developed all the time" (Woman 22).

In the category "Hopeful but doubtful", the progress was clear, and the confidence in their own skills and abilities strengthened seemingly.

"I was happy to notice that my skills actually are good enough to teach a basic music lesson" (Woman 23);

"My own musical skills are enough to teach music lessons" (Woman 22).

In the "Enthusiastic" category, progress was not as clearly observed as in the other categories, but the experiences of success were strong for most members. The confidence in own skills remained strong and, in some cases, even became stronger as the practice progressed.

“Planning and teaching the music lessons have been really enjoyable! My own skills have been good enough and the functionality of the lessons has been agreeable and nice for myself and the pupils” (Woman 22);

“I felt that my skills were good enough to carry out this teaching practice... Own skills have developed greatly in teaching music during this practice module” (Woman 23);

“I felt my own skills were good enough” (Woman 24);

“My own skills developed continuously during the practice when I gained experience and touch to teaching music. Pupil acquaintance proved to be the most valuable skill that I could take advantage of in any kind of situation” (Woman 21).

The feelings of every student after the teaching practice module were much more positive and sunnier than the feelings before the module. Progress and development took place in all categories. Progress was clearly observed in the category “Fearful and doubtful”. Self-reflection had changed the attitude of the students, and most of them thought that they had pulled through the study model well. In addition to issues about teaching music, the students reported developmental steps in teacher identity and classroom management. This shows success in supervision and the students’ real abilities for self-reflection, and with it the development through changes in the significance contents as the understanding of students expands.

“I survived!! I feel that during the fall I made a spiritual growth as a human being and as a teacher. My own teacher identity developed and now I can observe more issues and pay attention to problematic areas... I learned in the practice many methods for better classroom management and for creating a good nice atmosphere for learning” (Woman 22);

“During the practice module, I felt that I got very valuable experience in different teaching techniques and how they work” (Woman 22);

“I am proud of having challenged myself as a music teacher and also chose working methods outside my comfort zone. I succeeded in using versatile working methods: the period included teaching singing, instrument playing, and band” (Man 22);

*“Teaching music is fun. I think that teaching music is important and I would like to offer children positive pictures of music and its versatility. I had set a target to learn how to throw myself into the teaching situation and I felt that it was not difficult for me”
(Woman 39).*

The responses in the category “Hopeful but doubtful” clearly reflect growing confidence in own skills and abilities. The doubtfulness students had felt towards teaching music had disappeared compared to the starting point.

“Growing the self-assurance in teaching music succeeded well. Self-confidence strengthened in singing with the class, the use of my own voice succeeded nicely” (Woman 22);

“I was satisfied with the whole teaching practice module and I felt successful in many ways during it” (Woman 23).

In the category “Enthusiastic”, strong self-assurance and confidence in own abilities were clear for teaching music. They explored the challenges in their teaching and what they have to offer pupils much deeper than the other categories, which reflects that their music teacher identity had grown through experiences gained during the teaching practice, new significances and self-reflection.

“I succeeded in musical matters as a teacher. My lessons offered surely challenges for the pupils and I feel that the pupils also knew that I could teach them music and that I have good musical abilities” (Woman 22);

“I succeeded in building a nice and pleasant lesson which excited the pupils” (Woman 23);

“The practice module went OK... My dance lesson hit the jackpot and pupils were strongly thrilled with it. Playing the kantele and metallophones with the pupils was a beautiful experience. Especially nice was that some pupils came to tell me after my music lesson that they were excited about playing the kantele” (Woman 45);

“The best thing about the practice period was winning oneself and noticing own development. I got rid of my stage fright and developed as a teacher a lot.... I saw how changing my own habitus affected the pupils” (Woman 21);

“I succeeded in planning and carrying out all my lessons. It was great to see how the pupils were excited by rhythm notes and were thrilled with Peer Gynt” (Woman 22).

C. The most challenging areas experienced by students

The most challenging areas for the category “Fearful and doubtful” were lesson planning, grouping pupils, holding the peace for working, organizing and controlling the class together with motivating their pupils. The lack of own skills also showed strongly in their responses as well as knowing and using musical concepts. They also felt challenged arranging for school instruments and giving instrument instruction to pupils.

“I felt making and carrying out the school instrument arrangements was very challenging. It requires mastering many areas and a real understanding of what one is doing” (Woman 22);

“Classroom management was often challenging... Also, there was always a please for development in noticing all pupils individually” (Woman 21);

“Holding the peace for working was often challenging in the classroom. Pupils were often quite restless, and I had to use a lot of time to smooth their ruffled feathers... I also found teaching a new song to the pupils challenging because my singing voice is terrible” (Woman 23);

“Classroom management and motivating the pupils were the biggest challenges in teaching music” (Woman 21);

“To me it was most difficult to remember all the concepts in music and using them in changing situations in teaching” (Woman 39);

“Teaching music forces the teacher to observe several issues at the same time. One must concentrate on own piano playing and singing, keeping the basic rhythm and simultaneously observing the pupils and their behavior” (Man 27);

“Most challenging in music lessons for me was organizing and controlling the class” (Man 22).

In the category “Hopeful but doubtful”, the biggest challenges were in lesson planning and its details, IT problems, accompaniment, classroom management, teaching music theory and rhythms, classroom management and time usage.

“Planning the usage of time and organizing was challenging (not so much the contents)” (Woman 24);

“Planning was challenging when I didn’t know what I should do and what is useful” (Woman 21);

“I felt time was challenging, because pupils learn issues with changing speed... Finding out what is easy and what is difficult was also challenging to me” (Woman 23);

“Classroom management was challenging because pupils behave differently in music lessons than in other lessons, and the level of the noise gets high” (Woman 23);

“Accompaniment with piano was challenging because I had not played the piano before teacher education studies” (Woman 22).

The biggest challenges in the category “Enthusiastic” were mastering many issues at the same time, teaching music theory, differentiating, getting to the level of the musically weakest pupils, finding versatile teaching methods, giving orders, and throwing oneself into the teaching situation whole-heartedly. The challenges were deeper quality and required pedagogical exploring and speculation. The students not

only revealed the areas that were challenging to themselves, but they also discussed the areas from a pedagogical point of view.

"...most work I had to do was in putting my soul in the teaching and throwing myself into it" (Woman 21);

"Teaching the music theory part was challenging. I was afraid that I could not express the matters with the right concepts and in a way suitable for elementary instruction pupils" (Woman 45);

"It was difficult to find versatile teaching methods for each lesson" (Woman 23);

"...it was difficult for me to get to the level of the musically weakest pupils and differentiate my plans downward" (Woman 22);

"Mastering many issues at the same time was challenging...finding issues suitable for pupils' skills, differentiating" (Woman 21);

"It was challenging to give orders in a suitable way, the right issues at the right time" (Woman 24).

D. Student ideas for developing teacher education music studies

In the category "Fearful and doubtful", there were not many ideas for developing teacher education music studies. Many of them felt that their knowledge and skills were not adequate for giving ideas for development. Many of them felt that what they had learned in teacher education had prepared them for very useful and successful teaching, and they realized that practice at school was a good possibility to apply learned issues in practice. The students in the category wrote that the teaching in music studies is useful, but they lasted so short time that they could not reach the level of smooth music teaching because of their low starting skill and knowledge level. One of the students thought that every teacher, even while working should follow other teachers' work and ways of acting in other schools to keep his/her own teaching up-to-date. This indicates self-reflection on teacher identity. *"A teacher is never complete, there is always room for improvement. It is the same with teaching music"*. One student wrote that teaching music theory in teacher education should be developed better.

"In the teacher education, more value should be given to music education. There could be more lessons because music is a challenging subject to teach. In the education, I got really valuable skills and information" (Woman 22);

"I think that our music education has been really comprehensive. I cannot find anything to develop" (Woman 21);

"I think that learning music theory should be obligatory for all to be able to understand issues in other music courses. Before going to music theory

lessons, I did not understand all the matters that we went through in our music lessons" (Man 22);

"My opinion is that the amount of music courses should be kept at the level it is now. Teacher education should offer sufficient knowledge and skills for teaching music. Music belongs to the subjects that every teacher must be able to teach but it is more difficult to teach. A less talented individual can survive other subjects using a teacher's guide but not in teaching music" (Woman 37).

The developmental ideas in the category "Hopeful but doubtful" for teacher education music studies concentrated on music theory, making a periodic plan, more encouraging supervision, playing piano in the classroom, and creating musical exercises. The amount of music being taught was hoped to be bigger.

"In the multidisciplinary studies there could be more music lessons observing ... Rehearsing music lesson planning would be a good thing" (Woman 24);

"Instrument playing using other than just rhythm instruments should be practiced more. For example, guitar playing was handled only in two lessons and it remained completely foreign for me, I did not learn to read notes or other markings used for guitar" (Woman 22);

"It is rather challenging to use in teaching music when you have had very little guidance in it" (Woman 21);

"Teacher education should offer a "Music for dummies" course where music theory is explained in an easy way and as simply as possible" (Woman 23);

"...making the periodic plan could be practiced in music courses... maybe a little more encouraging feedback could be given in supervision" (Woman 21).

In the category "Enthusiastic", the ideas for developing teacher education music studies emphasized learning modern up-to-date children's songs and achieving a general level of skill. One of the students lifted up the optionality in the university music studies. It could be the answer to heterogenic student group's musical skills development. Each student would get teaching in the areas where it would most be needed.

"The skills that are learned in Joensuu teacher education do not provide the possibility to be able to teach music. Learning the piano is almost unnecessary because very few students learn anything and in other means the teaching here is quite theory oriented" (Woman 22);

"...more attention could be pointed in how to plan music lessons and carry out at different class levels... Also, more elective courses should be offered" (Woman 45);

*"The only thing I missed was modern up-to-date children's songs"
(Woman 21).*

Conclusions

1. An examination of student experiences of the teaching practice module, in general, showed that the study module had produced strong self-reflection, which clearly developed the student teacher's identity and opened new approaches to teaching. It is obvious that the significance world of the students changed in a way that the changes were probably permanent in nature. The interaction with supervisors (practice school music teacher and university didactics lecturer) fulfilled its significance as a molder of professional ways of action. According to the students' responses, the interaction between the supervisors and the students has been equal, confidential, and based on mutual respect. The supervisors succeeded in creating a safe atmosphere where a student's own ideas and thoughts were given the opportunity to be tried, tested, and accepted.
2. The supervision was tightly connected to the context of music lessons and their planning. Student responses describe the practice module as a time of spiritual growth and strengthening of self-confidence and teacher identity. Almost all students wrote that their confidence in their own skills in teaching music increased. This shows that their learning experiences were significant. Because the students wrote that they observed their own teaching from a new perspective, that made them notice many issues that they did not see earlier, we can speak of an investigative way of working with supervision, which led to self-reflection and, through it, recognizing individual ways of working. This leads to understanding-based change, which the students described in their responses.
3. Because many students felt that their earlier skills and level of knowledge in musical areas was low, the building of new information based on old knowledge was difficult for some of them. In these difficult cases, the earlier significance perspectives on teaching music were negatively oriented, and the student's self-confidence in teaching music was weak. The new information was filtered through earlier experiences, mental images, presuppositions, and world view. If these were negatively oriented, the music practice module was able to change the negative significance perspectives in a positive direction. When a student presupposes that he/she is unmusical without any musical talents, it is usually a scientifically unproven meta-conception. Changing this presupposition requires becoming conscious of one's own musical operational preconditions, which makes possible the change in significance perspective.
4. Many of the students said that they stepped outside their comfort zone, which shows that they had an opportunity to try new dimensions of themselves and to set personal goals for the practice module. The group formed by other students and collaborating as a teacher pair teaching together has been seen as positive elements in the practice module. According to student responses, we can say that their self-assertion grew, and, through that growth, their interpretation of

reality was enriched and their world-view expanded and diversified. The students had become more conscious of their own opportunities. In this manner, the new understanding gained through practicing experiences was integrated or is being integrated into the students' conceptual world and operational theory by changing their significances.

5. According to student responses, the Kolb's (1984) model worked on the practical level. The supervisor's encouragement to attain experiences of teaching through the senses led to identifying some details for observation. Processing these with supervisors and other students led to inventing new ideas and learning new ways of action through it. When the experiences, emotions, and new ideas were combined with earlier knowledge, they are started to be tested in practice. It seems that many students are melting the ideas as a part of their value world, which means that their significance perspective is in the process of change, and this change is reflected in their action in teaching practice lessons. The phases of the reflecting process can be seen clearly in the students' responses: remembering of the lessons and self-critical speculation, becoming conscious of emotions that arise from earlier experiences, and rethinking and reconsidering own thoughts and actions.
6. The students' responses show the effect of the practice on their operational theory. The students recognized their own strengths and lack of skills, but they were also conscious of how to compensate or develop these areas. This reflects that the students had moved from information receivers to information builders to becoming conscious and understanding the teaching processes.
7. When evaluating supervision, the students mentioned that they might have needed more group discussions and exploration of common themes together. One student wished for more encouraging feedback from the supervisors. In this case, the supervised student had probably expected supervision with a dialogic approach in which the supervisor takes the master - journeyman approach. This student was disappointed because of contradictions and wrong presumptions. On the other hand, the supervisor was not able to interpret the emotional atmosphere in the right way and sensitively enough.
8. On a general level, we saw that the self-assurance and self-confidence of three groups of students, among those who belonged to the "Fearful and doubtful" category, was strengthened more than in other categories of students. As they realized that they survive the music teaching despite the lacking skills or knowledge in music. Many also noticed that they could use their classroom management skills in music lessons. Teaching together with another student was also perceived as positive. The category "Hopeful but doubtful" quickly lost their doubts about their own skills and abilities as they started the practice lessons; support from student colleagues was important to them.
9. The difficulties in planning decreased quickly for all categories, and common teaching helped many of the students. The category "Enthusiastic" included most students who had music as a hobby. Many of them played the piano and had taken some skill-level exams in piano. The different areas of music education seemed familiar. The students in the category "Enthusiastic" could

analyze deeper their own teaching than the students in the other categories. Their attention was not limited to their own performance; they could also evaluate the reactions of pupils more, analyze their own lesson content better, and their own performance as a music teacher. Pedagogical speculation was clearly more detailed and deeper for this category than for the other ones.

10. Music has been and will remain one of the most feared subjects taught at school. The positive experiences that we describe in this article are one way of moderating these fears and making teaching students believe in their skills and abilities and manage to teach music in spite of minor lacks in some musical areas. The changes in the UEF teacher education curriculum has also helped mold the students' attitude climate for teaching music in the future. Music studies have been integrated together with other art and skill subjects, and the progress made from this clearly helps students believe in their own potential to teach music in school despite shortages in skills and knowledge (Mäkinen, Eronen & Juvonen, 2018).

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PROFILE OVERVIEW ON THE PRINCIPALS OF VOCATIONAL MUSIC EDUCATION INSTITUTIONS

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Abstract

In both general education and vocational schools in Latvia, school leaders are supported by deputy school leaders (OECD, Education in Latvia 2016).

In this paper, the authors show the main survey results and give an overview on the principals of vocational music education institutions in Latvia. This research continues their previous work by emphasizing the main advantages and disadvantages of the principals' professional profile and as the leaders of educational institution, overall.

Object of the research: the profile overview on the principals of vocational music education institutions.

Aim of the research: to create the profile of the leaders of the institutions of vocational music education.

Method of the research: online survey (17 closed questions and 2 open questions), in which 80 respondents (from 110 principals of the institutions of vocational music education in Latvia) participated.

The main results of the survey:

- *mainly principals are educated in performing arts, education and management;*
- *mainly principals are promoted teachers who come from the pedagogical staff of current music school;*
- *there are by 10% more male principals who earn higher salaries than female.*

Keywords: *vocational music education, management, school leadership, principals*

Introduction

In this research the authors are focusing on the lower level of vocational education in Latvia, which officially represents institutions of vocation-oriented music education –

so called music schools or music and art schools and their principals. The leadership and development of institutions of the vocational music education in Latvia is a responsibility of the music school principals – *leaders*.

A key person in any school is the school leader. In both general education and vocational schools, leaders are supported by deputy school leaders. School leaders are usually teachers who were promoted to (deputy) principals upon passing a local competition (OECD, 2016).

Music education system in Latvia consists of state, municipal and private education institutions that provide vocation-oriented, vocational secondary and higher education programs. The goal of vocational education in Latvia is to provide opportunities for further education after the elementary or secondary school, to acquire initial vocational qualifications, develop skills for continuing vocational education, and acquire the right to continue education at a higher education level (Stige-Skuskovnika, 2018).

The institutions of vocational music education (so called art and music schools) are placed under the authority of the Ministry of Culture and coordinated by the Latvian National Cultural Centre. At the moment, Latvia has 51 music schools and 59 music and art schools. Generally, these schools are founded and maintained by municipal governments. Children may attend these schools in addition to attending regular school.

As stated in Latvian regulations, recruitment of school principals depends highly on their teaching qualifications and experience. There are just standard regulations of the Cabinet of Ministers on school principal recruitment. Music school principals are recruited with non-terminated contract by municipalities of Latvia which means that the Latvian National Cultural Centre has no possibilities to interfere in decision-making (Stige-Skuskovnika, 2018).

Object of the research: the profile overview on the principals of vocational music education institutions.

Aim of the research: to create the profile of the leaders of the institutions of vocational music education.

Method and Sample

The research presented in the paper is a part of a larger scientific work analyzing different types of topicalities and trends concerning the work of principals of the institutions of vocational music education in Latvia. In this case, the key task was to analyze the survey results and find out the main conclusions about the current profile of the principals as leaders in so called music schools, and music and arts schools.

To achieve the aim, a survey was carried out and results were analyzed. Online survey (17 closed questions and 2 open questions) was organized from the 12th till 26th September, 2018.

Thanks to the personnel of Latvian National Cultural Centre, who showed a deep interest in authors' research: they were as an intermediator in communication between authors and music school principals.

80 school principals (from 110 principals of the institutions of vocational music education in Latvia) participated in the survey. The review of survey results is given sequentially choosing the most significant questions and their results for creating the profile of the principals.

Characteristics of participants of the survey according to gender and age parameters see in Figures 1 and 2. From 80 school principals who participated in the survey 62 are female and 18 male respondents (see Figure 1).

Proportion of male/female principals

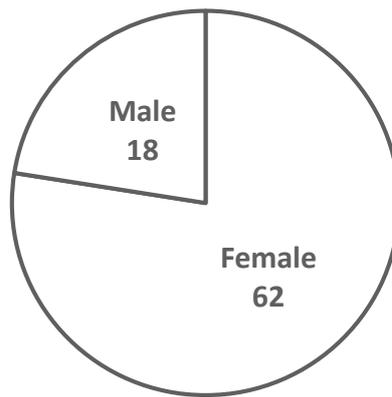


Figure 1. Proportion of male/female participants of the survey (N=80)

From 80 school principals, 45 are in the age group of 51 – 65 years, 25 – in the age group of 38 to 50 years, 7 – in the group of 25 to 37 years and only three respondents are 66 and more years old (see Figure 2).

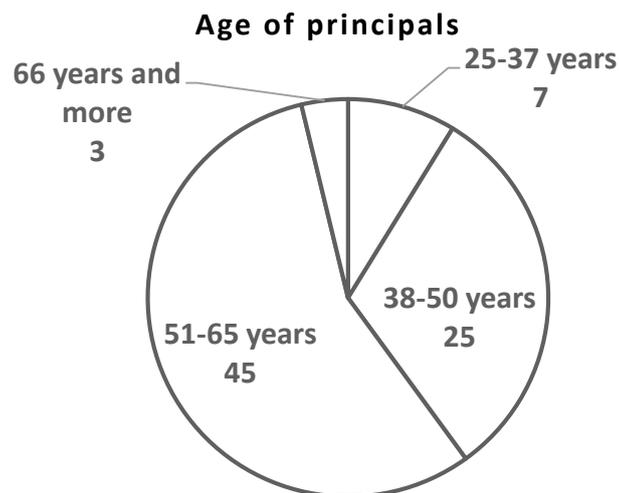


Figure 2. Age of survey participants (N=80)

According to the participants' education parameter, one principal holds a doctor's degree, 61 – a master's degree, 17 – a bachelor's degree and one has a short cycle education diploma.

Principals from five Latvian regions participated in the survey (see Figure 3).

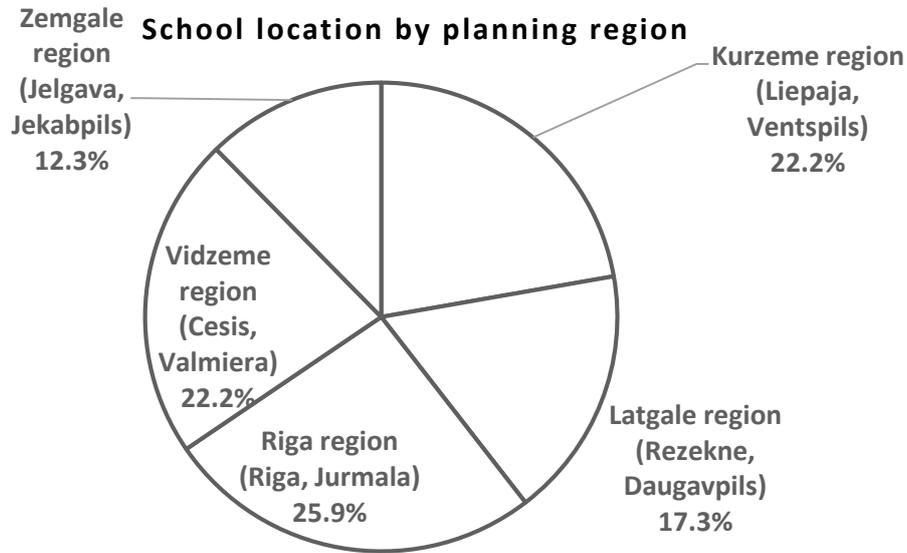


Figure 3. School location by planning regions of survey participants (N=80)

Almost all schools that have less than 300 pupils (92%) have less than 50 employees; most of schools with 300 and more pupils have 50 – 250 employees (86%), and only half of the rest of big schools have more employees (three in total) (see Figure 4).

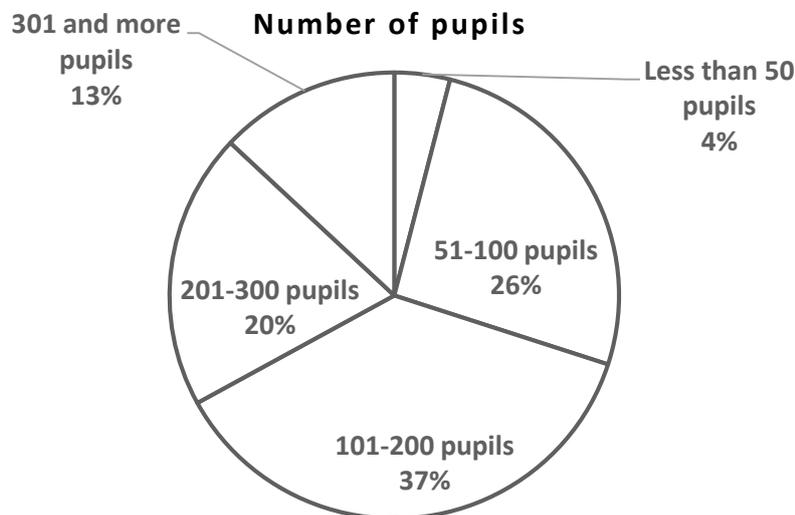


Figure 4. Number of pupils of survey participant schools (N=80)

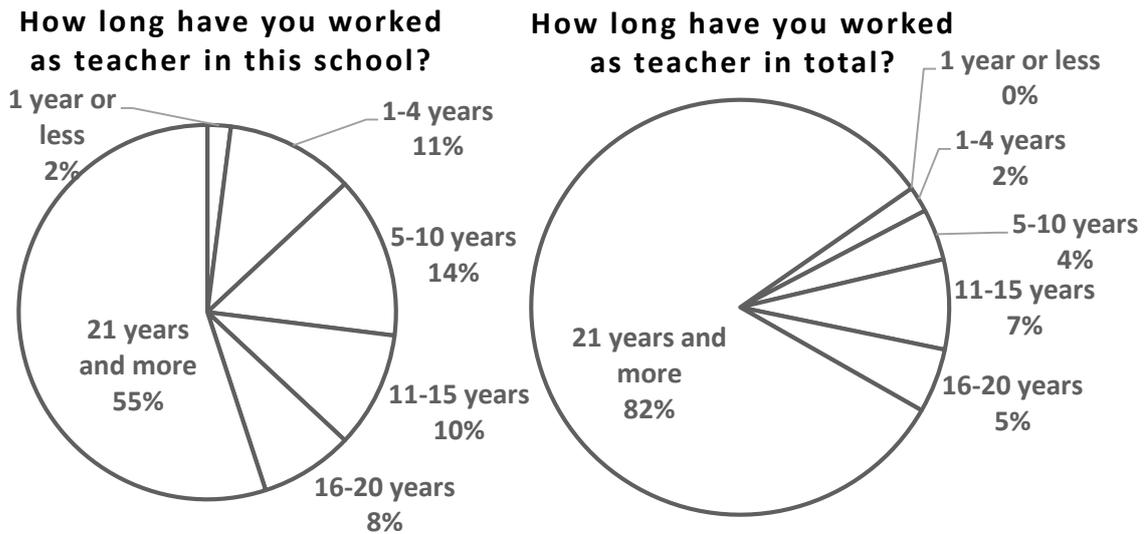
Overall, the overview of characteristics of survey participants shows the average school principal who is a female, at the age of 51 to 65, holding a master's degree.

Results and Discussions

No statistical differences by gender were discovered (not by school size, region or previous experience of the principal).

A. Pedagogical experience

72% of principals, who currently are not working as teachers, have more than 21 year of pedagogical experience.



Figures 5-6. Pedagogical experience of survey participants (in current school vs in total) (N=80)

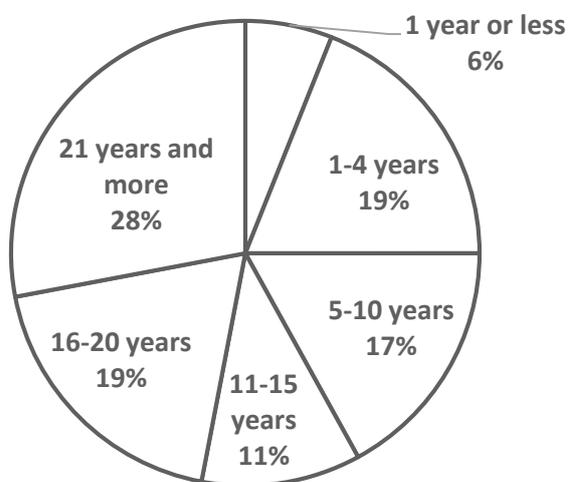
As Figure 5-6 shows, the greater part of survey participants has worked as teachers more than 21 years (82%) and 55% of survey participants are working in current school more than 21 year.

B. Leader's experience

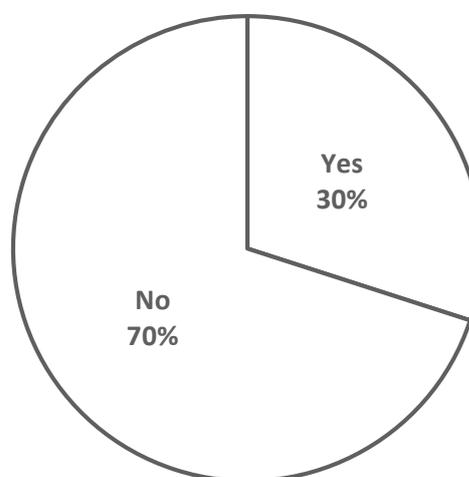
88% of principals who do not have previous experience in a leading position have been working in the current school as teachers for more than 21 year.

If the respondent has had a previous experience in a leading position, he/she could specify the position (for example, most popular answer was *deputy director*) (see Figure 7-8).

How many years are You working as principal?



Did You have experience in leading position before the principal position?



Figures 7-8. Leader's experience of survey participants (years in current school vs experience in total) (N=80)

Also Figure 7-8 shows that 28% of survey respondents have been working as principals in current school for 21 and more years. Very close results show 17% of principals who are principals 16-20 years and 1-4 years. The authors conclude that school principals are mostly new or well experienced in their position.

Participants of the survey mentioned the following knowledge and skills as necessary for an effective school leader (see Table 1).

Table 1. Knowledge and skills mentioned by survey participants (N=80)

Knowledge	Skills (soft)
Financing	Communication skills
Human recourses	Cooperation skills
Pedagogy	Skills to act as a team member
Management	Leadership skills
Music	Creativity
Education	Planning skills
Law	Motivation
Psychology	Responsibility

Quantitative results show that 68% respondents have mentioned *leadership skills* as very important skills for a principal. These skills were mentioned in both closed and open type questions. 40% of respondents pointed out *communication skills*, mostly as a communication with pupils, teachers and parents. But 14% of principals specified the target groups for communication – pupils and teachers; 9% of respondents pointed out communication with parents. 20% of respondents of the survey believe that it's important that the principal is a professional musician. But 16% indicate that the knowledge of law is necessary.

There are no differences between leader's experiences as a principal, if authors analyze the mentioned skills. In all categories the respondents have pointed out leadership skills, communication skills, knowledge about law and being a professional musician. These results are the same also by age.

It is worth mentioning that the respondents who have been working as principals for 15 and more years indicate *self-development skills* as very significant. Also, only these respondents mentioned that it's very important to be *modern* and *study modern teaching and leadership methods*.

The young principals (experience in a principals' position up to four years) mentioned a lot of different skills and knowledge necessary for work (for example, financing, psychology, technology). The results also highlight the fact that by gaining the experience and with years principals pay more attention to the communication with different target groups, as previously mentioned – communication with pupils, communication with teachers, communication with parents. This shows that the precise and well-considered communication with specific target groups, could say with stakeholders, plays a very important role.

The results of this survey prove that there are almost no differences by age or leadership experiences of principals; they couldn't be divided into fewer categories as authors presumed. So, the next steps for the research should be considered carefully.

Conclusions

1. Mainly principals of the institutions of vocational music education in Latvia are educated in performing arts, education and management. The research confirms the assumption that the principals are mainly promoted teachers who come from the pedagogical staff of current music school. Very rarely they do have specific knowledge and education in management or leadership despite of its impact on the development of all school processes and pedagogical environment.
2. 70% of principals of schools with 300 and more pupils have previous work experience in a leading position. 70% of principals of smaller schools (less than 300 pupils) do not have previous experience in a leading position.
3. As most important knowledge and skills for effective school leader the participants of the survey (N=80 school principals) mentioned the following necessary knowledge and skills: a) knowledge in financing, human resources, pedagogy, management and music as well as b) leadership, communication,

self-development skills and modern teaching and leadership methods. Respondents note that they are ready to raise the level of knowledge and skills in the field of finance, management, pedagogy and psychology, since it affects the quality of education establishment management.

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THE PRINCIPAL NON-SPECIFIC AND SPECIFIC INDIVIDUAL-PSYCHOLOGICAL FACTORS INFLUENCING THE EFFECTIVENESS OF MASTERING MUSICAL IMPROVISATION

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Abstract

This paper analyses the manifestation of principal specific individual-psychological factors which in the given context are musical abilities and which determine the effectiveness of mastering musical improvisation by students. Just individual-psychological factors are those that determine achieving high results in learning practical musical improvisation under equal pedagogical conditions, which in this context are non-specific factors. Learning consists of theoretical and practical parts. This specific case study showed that practical mastering of musical improvisation by students does not depend so much on non-specific factors as on specific individual-psychological factors.

The effectiveness of mastering theoretical fundamentals of the process of learning the didactic model for style modeling in musical improvisation by students involved predominantly the objective non-specific factors, and within this context they are pedagogical conditions. Among pedagogical conditions, the theoretical basis of the authorial didactic model occupies a special place. The activity of specific individual-psychological factors displays itself against the background of the principal non-specific factors and therefore, even if other conditions are equal, some students produce better creative results than the rest of them.

The paper describes the manifestation of specific individual-psychological factors of effectiveness, namely, musical abilities and their role in the process of practical mastering of improvisator's creative skills.

Keywords: *musical improvisation, principal non-specific factors of effectiveness, principal specific individual-psychological factors of effectiveness, didactic model, content-analysis of improviser's activity*

Introduction

On the basis of scientists' conclusions and results of their scientific research (Ferand, 1938; Mehegan, 1962; Мартинсен, 1966; Рунин, 1980; Сапонов, 1982, 1989, 1996; Potter, 1990; Мальцев, 1991; Юнг, 1992; Gardner, 1993; Pressing, 2000; Адорно,

2001; Мартынов, 2002; Ward, 2004; Kertz-Welzel, 2004; Курт, 2005; Теплов, 2005; McPherson & McCormick, 2006; Барбан, 2007; Кинус, 2008, 2009, 2011; Dairianathan & Stead, 2010; Kingscott & Durrant, 2010; Столяр, 2010) the author of this paper has formulated the skills necessary for mastering the fundamentals of improvisation by students (Spigins, 2013, 2017; Спигин, 2015). At learning the fundamentals of improvisation, the main students' task is to develop such creative skills of improvisor's activity as:

- Ability to be guided by integrated impressions, integrated images which fulfil the function of some kind of generalized "subject" frames;
- Ability to instantly assimilate any musical idea, to enrich with images and creatively embody the material offered from outside;
- Ability to intuitively search for creative solutions among the multiformity of impressions and emotions;
- Ability to change the previous program of activities during the process of improvisation;
- Ability to generate productive ideas, to promote intellectual spontaneous activity;
- Ability to analyze and model original musical ideas;
- Ability to organize the process of creating a musical form from accidental fragments of other integral systems.

This case study showed that under equal pedagogical conditions, some students achieve better creative results than the rest (Spigins, 2013, 2017; Спигин, 2018).

Mastering the theoretical basis of improvisation involves theoretical and practical components of the educational process. The analysis of the results of the case study clearly showed that practical learning of musical improvisation by students depends not so much on non-specific factors as on specific individual-psychological factors. Under equal pedagogical conditions, just individual-psychological factors are responsible for better results at mastering musical improvisation, which in this context are non-specific factors.

The activity of specific individual-psychological factors manifests itself against the background of principal non-specific factors. This paper analyzes the manifestation of principal specific individual-psychological factors which determine effectiveness of mastering musical improvisation by students. The description of the manifestation of specific individual-psychological factors of effectiveness is necessary to understand the role they play in the process of practical acquiring the creative skills for improvisor's activity.

Research object: fundamentals of mastering musical improvisation.

Research aim: to describe manifestations of principal non-specific and specific individual-psychological factors of effectiveness at mastering musical improvisation when forming and developing students' knowledge and skills during the process of learning the fundamentals of improvisation (Spigins, 2013, 2017; Спигин, 2018), as well as to creatively interpret the results of the case study on mastering the fundamentals of improvisation.

Research methods: analysis of pedagogical literature, logical method, modeling.

Principal Non-Specific and Specific Individual-Psychological Factors of Effectiveness at Mastering Musical Improvisation by Students

A. Principal non-specific factors

In this context, pedagogical conditions are specific factors. In case of this research, pedagogical conditions will imply the totality of necessary measures contributing to a successful development of students' creative independence: provision of a creative psychological climate, development of learner's creative independence, development of student's creative potential. Most frequently, pedagogical conditions are understood as factors, circumstances, measures on which the effectiveness of pedagogical system's functioning depends.

The theoretical basis of the authorial didactic model based on style modeling has a special role among pedagogical conditions. The didactic model serves for the formation of an independent creative cognition, where thinking processes involve such mental operations as comparison, analysis, correlation, deduction, judgement, synthesis. Independent creative work provides conditions where special psychological mechanisms start operating, such as student's intuition, creativity, and self-effectiveness. They provide for students' developing a very essential quality – the ability to transform. Non-standardized tasks, the change of the existing improvisation style, involvement of students into the activity that answers to their inner gravitation towards self-realization develop student's creative abilities and increase personal interest, wish and volition. ***Style modeling*** may become such an activity for students.

The basic teacher's function during the process of learning style modeling is to organize the pedagogical process in such a way that learning of improvisation fundamentals would have both theoretical and practical aspects (Reimer, 1989; Elliott, 1995; Hallam, 2006; Столяр, 2010; Spigins, 2013, 2015, 2017). This may be done by using various work forms, e. g.: the analysis of music pieces of different genre, style and epochs; modifying melodic, harmonious, rhythmic, and textural material; spontaneous composing musical pieces or their elements; choosing examples of audio- and video recordings adequate to the studied style and genre. And finally, joint improvisation based on the acquired skills. Joint improvisation implements the practical direction and is an indispensable condition for shaping and developing students' knowledge and skills necessary for the profession of a future music teacher.

The process of style modeling of improvisation consists of such stages as:

- Defining the aim of style modeling;
- Setting and describing tasks;
- Analysis of the object or the process to be modelled.

The process of style modeling of improvisation includes modeling of:

- Musical ideas;
- Logic of construction (the order of exposition, development and interrelation of musical ideas depending on the form of improvisation);
- Linguistic plane (melody, harmony, rhythm, texture);

- Principles of development (repetition, transformed repetition, elaboration, derived contrast, contrast of correlation).

The process of style modeling can be fixed as schemes which reflect the stylistic peculiarities of melody, harmony, rhythm, texture, and logic of the construction of improvisation and as various oral and written descriptions of a syntactic, intonation-imagery and contextual-historical analysis for identifying the stylistic regularities of improvisation (Pressing, 2000; Ward, 2004; Spigins, 2013, 2017). All theoretical descriptions are approbated in practice either in a collective or solo improvisation already in the initial stage of modeling. The obtained stylistic model is constantly supplemented by the necessary experimental changes identified during the process of an additional analysis and practical work. During the process of this work, it is necessary to use the method of sorting out variants and of comparing, analyzing and correlating them. This, in turn, will lead students to some judgements and conclusions during the process of style modeling; if necessary, additional experimental changes are made (Dairianathan & Stead, 2010; Spigins, 2013, 2017).

The effectiveness of mastering the theoretical basis during the process of learning the didactic model for style modeling of improvisation predominantly manifested the presence of objective non-specific factors. These objective non-specific factors are equally available for assimilation to all students, and the teacher's function does not consist of making all students improvisers but rather in maximally developing their creative abilities. The manifestation of principal specific individual-psychological factors of effectiveness occurs against the background of the principal non-specific factors, therefore under all other equal conditions some students achieve better creative results than the rest. We will describe now the manifestation of principal specific individual-psychological factors.

B. Principal specific individual-psychological factors

Let's see how against the background of principal non-specific factors the activity of specific individual-psychological factors is manifested, due to which under all other equal conditions some students achieve better creative results than the rest. In the given context, the principal specific individual-psychological factor of effectiveness is the basic or general musical abilities (Назайкинский, 1972; Теплов, 2005). The contemporary science is of the opinion that to the basic musical abilities belong ear for music, sense of musical rhythm, musical memory, musical thinking and musical imagination (Овсянкина, 2007).

In the introduction to this paper, we listed improvisers' creative skills which they develop during the process of mastering the fundamentals of improvisation. Let's discuss now the skills mentioned above in detail.

The ability to be guided by integrated impressions, integrated images, which fulfil the function of some kind of generalized "subject" frames. At the concert, the improviser is guided by integrated impressions, integrated images which fulfil the function of a kind of generalized "subject" frames. An integrated impression appears to be, first of all, an unconscious, 'spontaneous' process which has nothing in common with the moment of the conscious, artificial combination of elements (Курт, 2005). During the improvisation, this skill manifests itself in the professional competence of regrouping by suggestion the stable and mobile elements of improvisation. Traditionally,

improvisation based on generalized subject frames is understood as different types of expounding musical events. For example, introduction or exposition, elaboration or some other developing expounding of musical events, culmination, conclusion or the coda (in the best examples of improvisation) are improvised by suggestion. The way of developing musical events implies different sequence of using methods for developing and correlating elements of melody as well as improviser's motivation for transforming musical material. Modification is made on the basis of already finished fragments of melody: motifs, phrases, melodic formulas, according to improviser's selection. In this way, it is possible to diversify types of expounding musical events in the improvisation, for instance, by changing the sequence of methods of the development and motivation for modifying the musical material. It is also possible to change the sequence of and motivation for using stable and mobile improvisation elements themselves. For this, musical images must freely flash through imagination. This is why musical thinking and musical imagination are necessary (Теплов, 2005). Music must be comprehended, evaluated penetrating into its specific content. When students study and master improvisation note-graphic and musical-sound structures are used as auxiliary means. They may identify them with both ideal and material models (Spigins, 2017).

Improviser's ability to instantly assimilate any idea, to enrich it with images and creatively embody it in the material offered from outside; for example, during a collective creation, at exchanging replies in an ensemble improvisation, and, in general, at perceiving and developing an alien improvisation line in the ensemble. In this case, this is not a spontaneous lyrical self-realization, but a public and urgent obeying a strange creative will - a skill of stirring up the whole improviser's creativity, the whole richness of imagination at the needed moment for fulfilling a single musical task dictated from outside and transforming it into a personal creative act. Within the given context, it is irrelevant to speak about the initial freedom and absolute independence of will and consciousness at creating images. The speech sooner is about the improvisation on the given theme (in a broad sense of the word). To cope with the tasks which improvisers face in such situations, the improviser needs qualities relating to the influence of previous experience on perception - apperception. And this experience must have a definite content and quality. B. Teplov emphasizes the fact that only a person with great spiritual - intellectual and emotional - content may be a great musician (Теплов, 2005). To assimilate any musical idea, to enrich with images and creatively embody the material offered from outside, we need such a psychological factor as ear for music which allows not only for hearing the sound, but also for evaluating all qualities of a sound, intonation, and the whole musical construction; first of all, musical timbre, pitch, loudness, and sound length.

The ability to intuitively search for creative solutions among the multiformity of musical impressions and emotions

Using K. Martinsen's (Мартинсен, 1966) statement, during the process of improvisation, improviser's sound-creating volition is heavily based on the moment of spontaneity and instantaneousness. Separate stretches of a thinking process, as a unity of the sensual and the rational, flash through the consciousness relatively unconsciously, but the outcome - a specific embodiment of the intuitive into the realities of musical texture - is absolutely clear and conscious. The decisive importance in the process of materializing musical ideas does not belong so much to the experience

of creating sound constructions guided by consciousness as to subconsciousness (Юнг, 1992). On the one hand, musical ideas, which the improviser is aware of, release the assets of sub consciousness, on the other hand, subconsciousness, by sending different impulses into the consciousness, enriches them up to materialization (Спигин, 2008; Spigins, 2015, 2017). This is why many researchers of problems on mastering improvisation insist on learners' developing their creativity and intuition (Green & Gallwey, 1987; Burnard, 2000; Burnard & Younker, 2004; Thompson & Lehmann, 2004; Barrett, 2005; Koutsoupidou, 2005; Webster, 2005; Goncy & Waehler, 2006; Hickey, 2009; Spigins, 2013, 2015, 2017).

The process of improvisation is a succession of moments during which materialize unpredictable to some extent mental constructs of a sound-creating will that follow each other in real time of performing. To develop the ability to intuitively search for creative solutions among the multiformity of musical impressions and emotions, we need such psychological factors as musical memory, musical thinking, and musical imagination. Musical memory enables to retain impressions and emotions, musical thinking creatively combines links and relations between different musical impressions and emotions, while musical imagination intuitively arranges different musical impressions and emotions in a succession of moments during which materialize unpredictable to some extent mental constructs of a sound-creating will, that follow each other in real time of performing (Spigins, 2013, 2015, 2017).

The ability to change the previous program of activities during the process of improvisation

Any process of improvisation (if it is really a creative but not a mechanical and deliberately uncontrollable) is accompanied by some new melodic nuances, fresh harmonic coloring, unusual textural solutions and articulative shades. Sometimes, the dynamics of accents, repletion of intonations and sounding are changed; sometimes even the very plastic of a creative behavior and the character of embodying improviser's personality into the created musical image are transformed. This happens due to various reasons. Sometimes the improviser is encouraged to such an impromptu by a creative dissatisfaction, an unforeseen search for a different solution, a strong need for experimenting, but sometimes - by a changed creative feeling which also determines the modus of improvisation process. And sometimes these might be unusual visual factors, a new situation, different acoustics, an unusual instrument, unfamiliar audience, new performers. In such cases, the improviser is hardly aware beforehand about the necessity to change the previous program of activities and often himself feels quite stunned by the situation (Адорно, 2001). For example, a rhythmic pulsation (stirred up to life by the improviser) suddenly gains an influence over the process of the development of form. And then, yielding to its potential, its immanent logic, its inner dynamics, its creative imperative, the improviser also further follows the direction of the creative development prompted by it, even despite his/her initial plan. In this context, improvisation can be regarded as a logical and psychological model of a creative process in general. The ability to change the previous program of activities during the process of improvisation is implemented on the basis of the great variability of temporal correlations. By relying on the sense of musical rhythm, the improviser can change the previous program of activities during the process of improvisation, but the rhythmic pulsation must not be lost.

*The ability to generate productive ideas,
to promote intellectual spontaneous activity*

A collective improvisational beginning (especially at exchanging replies in ensemble improvisation with the necessity to go into the structure of genuine artistic) genuine original cognition which can be comprehended also as a succession of local, happening in a real time of performing, improvisations. A collective creative process is experimental throughout its whole course at generating any (not merely musical) productive ideas. By the principles of generating new ideas, collective improvisation greatly resembles the methods for promoting intellectual spontaneous activity in research and invention programs. And at some stages of collective improvisation, in some of its manifestations - this is not so much following the already existing plans and models as a naturally developing rejection of them (Рунин, 1980). Occasionally, on the textural, syntactic and compositional level, there appears something unforeseen even for the improviser himself/herself. However clear and perfect the conception might have been, the improvisation opens up, appears before us in all the totality of its tasks only during the process when the texture materializes under improviser's fingers. In such cases grows the role of apperception: turning to the past, to the image of the events in the past. Here, for both the performer himself/herself and other participants of this activity, there is always place for new and unexpected solutions. The ability to generate productive ideas, to promote intellectual spontaneous activity requires the whole complex of basic musical abilities – ear for music, sense of musical rhythm, musical memory, musical thinking and musical imagination.

The ability to analyze and model original musical ideas

During the act of creation, the improviser holds a constant dialogue with what he/she is creating and through this also with the reality around him/her. The improviser might become aware of the fact that the needs of the audience essentially differ from his/her initial perceptions, however a sensitive and thoughtful improviser will analyze and assimilate them – and this is what allows us to call the process a creative cognition, and it often becomes a source of original creative findings. Through the moment of improvisation, a musician forces also the process of perceiving the logic of composition. A lot of musicians consider improvisation the generator of a creative process. Creativity is a process of self-organization, of self-disposition, and here the starting point, the first impulse is extremely important. And in this case, the improvisation may perform the function of inspiring personality's creative state and may determine the whole course of further development of a creative idea (Рунин, 1980; Spigins, 2013). Improvisation promotes musician's immanent potential; it saves the mind from inertia, gives life and spontaneity to this art. The ability to analyze and model original creative musical ideas relies on musical memory, and musical memory, in its turn, implements the procedures of sorting out variants of combinations of musical ideas for modeling.

*The ability to organize the process of creating a musical form
from accidental fragments of other integrated systems*

A careful examination of improviser's creative work cannot be closed into the sphere of regularities. Any improvisation can proceed within the framework of only 'relative necessity'. It is impossible to calculate some certain empirical or theoretical totality of improviser's experience, and it is difficult to establish the informative context of his/her choice. The style and content of improvisation art are not stable, they can change, and

they do not obey any precise laws of their existence. Everything that is necessary and possible for the improviser and which he strives to collect and merge together even under the conditions of maximal intention, is, until the moment of creating a musical form, only accidental fragments from other integrated systems. Improviser's creative work is the struggle of his/her individuality with the trends – depersonalizing it, with styles, dominant ideas in music and a modeling of an individual informative system, which partially transforms later into a common system. In improviser's activity, chance determines his/her changeability in respect of information sources, changeability of functional meanings of the material in them (style, genre, improvisation content) and depends on a number of moments, for example social, historical, biological. The development of the ability to organize the process of creating a musical form from accidental fragments of other integrated systems is based on the whole complex of basic musical abilities.

Conclusions

1. Having successfully passed the tests in theory of mastering the fundamentals of improvisation, some students felt quite helpless at practical classes. Students felt rather perplexed. In the result of different kind of testing carried out among the students, it became clear that only those students who have ear for music, sense of musical rhythm, musical memory, musical thinking and musical imagination are able to understand regularities of links and relations between elements of musical form. The point is that mastering the fundamentals of musical improvisation consists of learning the theoretical basis of the didactic model for stylistic modeling as well as of the development of theoretical skills of improviser's practical activity. In the effectiveness of learning the theoretical fundamentals of the process of mastering the didactic model for the stylistic modeling of musical improvisation, the objective non-specific factors were the prevailing ones.
2. But the effectiveness of the development of creative skills of improviser's practical activity during the process of mastering the fundamentals of the didactic model for the stylistic modeling of musical improvisation depended completely on specific individual-psychological factors, which has been shown by the results of this specific case study. Under equal pedagogical conditions, which in this context are non-specific factors, just individual-psychological factors are those that determine achieving good results in students' activity at mastering practical musical improvisation.
3. We have to bear in mind the fact that even a very musically gifted person was not born with 'ready' musical abilities, but only with potentialities for them (Выготский, 1960, 1998; Леонтьев, 1975). The development of musical abilities from these potentialities requires hard teacher's as well as improviser's work, and this also needs environment imbued with musical culture.

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THE USE OF MENTAL TRAINING IN THE DEVELOPMENT OF RHYTHM AND INTONATION IN THE PRIMARY SCHOOL VIOLIN TEACHING AND LEARNING PROCESS

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Abstract

Mental training has been successfully employed by professional musicians and athletes, though rarely applied systematically in the instrumental teaching and learning process. The aim of this study is to research the development of skill connected to rhythm and intonation in violin playing using mental training in the teaching and learning process of primary school violinists.

Six students (average age - 11) participated in two mental training routines. The first included alternation of physical practice and perception; the second, conducted away from the instrument, integrated movement of left-hand fingers, mental imagery, and perception of voice.

Analysis after the first mental training routine revealed rhythmic improvements ($Z = 2.644$, $p = 0.008$), whilst the second showed improvement in intonation ($Z = -4.469$, $p = <0.001$), suggesting that alternation of physical and mental aspects with perception assists in developing rhythmic skill, whereas intonational skill can be developed through combining perception, imagery and movement away from the instrument.

Key words: *mental training, mental imagery, violin pedagogy, rhythm, intonation, violin playing*

Introduction

Playing the violin and learning new repertoire requires development of precise sensory and cognitive processes that govern pitch and rhythm (Zatorre, 2007) as well as sensorimotor translation of the information read from a musical score (Stewart et al, 2003; Gruhn, 2015). This requires acquisition of a synthesis of mental and physical skill.

Research in neuroscience has highlighted the function of neuroplasticity in learning (Doidge, 2015), the creation and strengthening of connections between neurons that occurs similarly through physical or mental practice (Foerster et al, 2013; Ruffino et al, 2017), and, more recently, the important role of mental processes predictive of action, such as maintaining musical pulse (Patel & Iversen, 2014).

The process of mental training deliberately alternates physical and mental practice, and in doing so creates awareness of the mental and physical connections occurring in skill learning. Whilst this may help to explain its successful use by already-trained practitioners, the use of mental training with young learners, and the purposeful exploration of the aspects that could facilitate its later independent use, which is largely neglected in the literature, is this study's *raison d'être*.

This paper aims to research the development of skill connected to rhythm and intonation with young violinists using mental training and to test its effects pre- and post- mental training.

Object of the research: the teaching and learning process of primary school violinists.

Methods

Analysis of the literature concerning learning in the brain (Perry, 2006; McKenzie et al, 2014; Doidge, 2015), mental training in music and sport (Eberspächer, 2007; Klöppel 2010; McHugh-Grifa, 2011; Mayer & Hermann, 2011; Guillot et al, 2013), neuroplasticity in musicians (Brodsky, 2003; Haslinger et al., 2005; Rossi et al, 2019), similarities of brain activity in mental imagery and action (Ganis et al, 2004; Avanzino et al, 2015), spontaneous mental imagery production from vocabulary use (Kosslyn, 1990; McCrum, 2016) correlates of rhythm and intonation in the brain (Patel & Iversen, 2014; Tal et al, 2017), cognitive aspects of intonation (Zatorre, 2007; Gruhn, 2015), identification of mental training components in the violin literature (Galamian, 1962; Collins, 1962), analysis of intonation used in violin playing (Sassmanshaus, 2012; Keyes, 2013; Siljestam, 2013; Whitcomb, 2017).

Empirical analysis methods: Collection of student rhythm and intonation data: *Melodyne 4*. Statistical analysis: IBM SPSS Statistics 21.

Definitions

Mental training has been defined as the training of mental practice of action without its accompanying movement (Eberspächer, 2007) and used in sports psychology as a method of developing awareness of the psychological and cognitive aspects which influence the learning and performance of a task (Mayer & Hermann, 2011). The term in music has been used similarly, where the ultimate goal is not movement alone, but the sound that the movement creates (Klöppel, 2010). Based on the use of mental imagery – ‘seeing’ in the mind’s eye – which can be based on any sense mode (visual, haptic/motoric, auditory, etc.) or any combination of those (Thomas, 2014), the process mental training often consists of a phase of progressive relaxation, followed by mental imagery of movements and/or sounds, followed by its practical realisation on the instrument (see Klöppel, 2010).

Whilst the processes of movement and imagery are separate in many mental training texts, more recent studies in sport have found the advantage of combining movement with imagery – which reportedly enhances the production of mental imagery (Guillot et al, 2013). In music, the relatively unexplored area of miming instrument-playing movements – also called ‘air instruments’ – has also been acknowledged as being a form of mental practice (McHugh-Grifa, 2011). Thus, it is also possible to add to the definition of mental training the aspect of movement and/or perception. To understand this further and to understand how this can assist in placing mental training into a pedagogical environment, it is necessary to review the connections between learning and mental training in the brain.

Skill Learning and Mental Training

There is now a wide range of research in neuroscience concerning mental imagery and its application in mental practice; that it utilises similar areas in the brain to actual practice. This is confirmed in motor imagery, which uses the same motor areas in the brain as in actual movement (Avanzino et al, 2015); that visual mental imagery activates similar brain areas to actual visual perception (Ganis et al, 2004); and that the more activations occur – which includes both the mental and physical activity – the stronger the neuronal connections become for those actions, and more they are myelinated (McKenzie et al, 2014), allowing faster transmission of electrical signals and increased ease of execution. This neuroplasticity has been identified as being at the basis of learning in the brain, the results of which can be identified in professional musicians. These include cross-modal activations; that a stimulus – such as silent observation – activates auditory areas of the brain associated with producing those observed movements (Haslinger et al, 2005) and that musical score reading induces auditory imagery (Brodsky, 2003). Interestingly, adding mental imagery during stimuli – such as musical score reading, or listening during score reading – did not increase brain activity, compared to pure mental imagery without stimulus in professional musicians, since these areas were already well-connected in the brain (Rossi et al, 2019), perhaps pointing to the hypothesis, that concurrent perception and mental imagery could indeed increase motor activations in young, less experienced learners, helping to link the correct sound with notation and movement. This, together with observation learning that can also be linked to mirror neuron system research (e.g. Rizzolatti & Craighero, 2004), would seem useful in developing mental training routines for young violinists.

Yet there are additional aspects identified in neuroscience that influence the learning and perfecting of a skill. In traditional mental training used by professionals, this is accomplished, in part, through progressive relaxation – a component of the mental preparation phase of mental training. In neuroscience reduction of stress, that can be also accomplished through concepts of relaxation and meditation, has been identified in assisting the regulation of an area of the brain called the posterior cingulate gyrus (Garrison et al, 2015), a part of the limbic system, malfunction of which can hinder access to long term memory. Indeed, areas of the brain that are activated during stress – such as the limbic system – act to filter out any information not considered important for survival, initiating the so-called ‘fight or flight’ response (Perry, 2006). Thus, examining the processes connected to mental training and learning can assist in devising approaches to teaching and learning. These can include the concept of

expansion of ease: with awareness that the language used and the concepts discussed can also create spontaneous mental imagery (see Kosslyn, 1990; McCrum, 2016). Indeed, this too can create a stress response, especially if it produces imagery of difficulty or pain (Hishitani, 2011). It is perhaps not surprising, then, that a reduction of teacher verbal instruction has been identified as an effective method in sport for reducing interference (Gallwey, 1974).

In fact, the construction of a student's own mental model of the task at hand appears to be paramount in learning – a concept that appears in the writings of J. S. Bruner, who identified *“three systems of processing information by which human beings construct models of their world: through action, through imagery, and through language”* (Bruner, 1964, 1). This observation fairly accurately reflects the inclusion of mental training in the pedagogical process.

But how can mental training be included in the learning of rhythm and pitch on an instrument?

Cognitive aspects of intonation

Our previous research concentrated on the concept of creating and improving intonation on the violin and referenced research concerning the process of playing an instrument. In that study, a mental training routine was created based, in part, on the findings from cognitive neuroscience of playing a musical instrument, where the process of the creation of a mental model was identified. The mental model creation process started with a stimulus – score reading and/or observation – followed by creation of an initial mental model of combined sound/tone and rhythm. This is then realised in actual practice, at which point perception of the actual sound takes place and the physical playing is altered to match the mental model, and/or the mental model is adjusted, reacting on the experience created by the physical realisation of the sound (see Zatorre, 2007; Gruhn, 2015).

The mental training routine also incorporated concepts presented in sports research – that mental imagery is enhanced with movement (Guillot et al, 2013) and in neuroscience – that a major aspect in developing instrument-playing skill is the auditory-motor coupling (Kajihara et al, 2013). Concepts including approach: the language used in the pedagogical process and the elaboration ease in technique using personally-relevant metaphoric imagery, were included in that mental training routine, followed by combined perception and miming of actions that create the music with the violin in hand.

As auditory and motor areas in the brain are inherently linked, it is possible to understand why the mental training routine not only improved intonation, but also rhythm. However, since the previous paper started from the viewpoint of intonation, this paper will examine mental training from the viewpoint of rhythm: to understand if it is possible or necessary to separate the two in mental training.

Neural Correlates of Rhythm

Research in neuroscience has identified that the ability to recognise and tap along to a beat in music depends on communication between auditory and motor planning regions of the brain – even in the absence of movement (Patel & Iversen, 2014). The quasi-innate ability of perceiving a beat – stronger in humans than other species, including primates – is supported by motor planning neural structures that simulate periodic movement, transmitting an impulse to the auditory system that predicts the timing of forthcoming beats. This creates a two-way pathway between auditory regions and motor-planning systems. Patel’s & Iversen’s *“Action Simulation for Auditory Prediction Hypothesis”* (2014) is significant in devising a mental training routine for rhythmic awareness, since their observations not only relate to similar processes sought deliberately in mental training, but also highlight an important aspect of rhythm processing: that it sets up precisely-timed beat-related expectations; to understand the beat, it needs to be predicted (see Figure 1). This understanding is flexible – a beat can be faster or slower and perception is adaptive. More specifically, the researchers noted that the brain’s motor planning system simulates movement of periodic body movement patterns, in a beat tapping exercise.

More recently, research has revealed that beat perception creates cortical oscillations at the same frequency as the beat in music and this occurs even if a beat is omitted from the auditory stimulus, confirming that neural activity at the same rate as the pulse is generated internally, rather than occurring purely as a reaction to external stimuli (Tal et al, 2017).

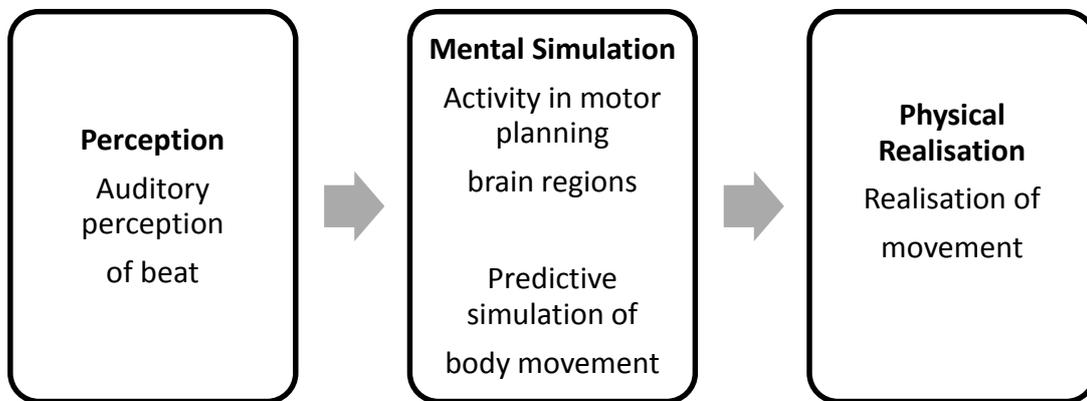


Figure 1. Process of beat cognition (diagram based on Patel & Iversen, 2014; Tal et al, 2017)

These discoveries lead to questions about the nature of mental training routines for the development of rhythm. The explanations of the mental processes connected to learning and those connected to mental training lead to the realisation that mental training needs to consider both the deliberate use of mental imagery and its spontaneous creation. Playing an instrument creates the spontaneous formation of neural structures that connect to the concept of the mental model, but its creation is spontaneous. Awareness of these spontaneous activations and working on them deliberately could indeed assist in creating informed mental training routines.

Could a mental training routine for the development of rhythm, therefore, be based on the alternation of physical production of sound on the violin with auditory perception that can help to bring into awareness the predictive nature of pulse? What would be the effects on rhythm and intonation of an exercise like this? Additionally, what would be the removing the violin, and simply imagining the process of playing the violin through mental imagery and replacing the sound of the violin with perception/production of vocalisation of the sounds required? To develop these concepts into actual mental training routines, it is first necessary to identify aspects of these in the existing violin literature.

Alternation of Physical and Mental Aspects in Violin Literature

Though rare, alternation of physical and mental components can be traced in the violin literature. Collins (1962), in her handbook for class violin teachers, suggested a set of so-called 'drills' for the development of pitch, two of which are of particular interest to this study. The first involves silent trill exercises – where the students use the fingers: 0101, 2121, 2323, 4343, whilst vocalising the finger number as it is used. The teacher, meanwhile, plays the sounds on the violin and encourages the students to sing the number of the finger. She notes that if a student cannot be persuaded to sing, the pitch of their voices however seems to alter as they 'speak' the finger numbers. Additionally, she notes that if the students start playing *pizzicato*, the process of vocalisation is simplified. The goal of the exercise is to train the students to "hear the pitch of the sounds inside their heads" (Collins, 1962, 67). Her second significant exercise again to be carried out within a set of finger 'drills' - this time with sound – involves dropping the finger of the next note to be played and before actual playing the student is asked to imagine the sound. This is followed by checking to see if they had attained the correct note mentally, by actual realisation of the note with *pizzicato*.

These two exercises are significant, in that they encourage the use of mental imagery and anticipation, though not described as such by the author. Whilst there is little doubt that Collins' first exercise could assist in the production of auditory mental imagery, the second exercise may, in fact, be useful in developing concepts of rhythm, since it alternates actual sound with imagery predictive of sound, as identified in the neuroscientific literature in connection to rhythm. Interestingly, the exercises the author describes are designed to be presented to the students without musical notation - and rather than being used as a tool for learning new repertoire, they are used as technical exercises "allied to pitch" (Collins, 1962, 68). Their description of being 'drills' also perhaps defies the premise of mental training, having the danger of losing the personal interest of the student. Musical notation in Collins' method is only introduced after the students have repeated all of the 'drills', and after being able to sing the pitches of the notes, instead of the finger names. Overall, they are connected to mental training, but approached through the concept of physical work, which is perhaps consistent with the decade in which they were written.

However, violinist and pedagogue Galamian (1962), in the same year writes that the foundation of technique-building lies "in the correct relationship of the mind to the muscles" (p. 5) and labels this concept the mental-physical relationship, correlation. He notes that technical mastery is not controlled by the strength of the muscles, but by their response to the "mental directive" (p. 6). In a series of rhythmic and accented

patterns, he attempts to improve 'correlations' of mind and muscle response. Interestingly, Galamian does not elaborate on these exercises in detail, even describing them simply as co-ordination exercises later in his book and so it is possible that the significance of these exercises is often overlooked. The rhythms presented – starting with a dotted quaver, followed by a semiquaver in the first exercise – have the effect of allowing the student to prepare mentally on the longer note for the next note(s). The rhythms gradually become more complicated – such as a dotted quaver, followed by three semiquavers in the third exercise, but still allow the student to mentally prepare, using both auditory and motor imagery, for the next group of notes whilst playing the longer one.

Interestingly, Galamian's correlations are also designed to be used in violin repertoire being learnt by the student, and rather than purely increasing technical demands, Galamian is effectively training the concept of simulated movement or mental imagery during the playing process, that can now be identified in the neuroscientific and mental training literature as being significant. In fact, the rhythms have the effect of shifting focus of the beat, so that the student creates a mental bookmark for each note – from which he or she can now proficiently move to the next, creating a quasi-mental framework of the repertoire.

Whilst Galamian's methods are designed for more advanced students, the essence of alternation of mental and physical is actual in the creation of mental training routines in with primary school violinists.

To assist in identifying the differences in student playing pre-versus post mental training, it is necessary to conceptualise the intonation used in violin playing.

The Peculiarities of Violin Intonation

Accuracy of intonation has been described as "*the ability of musicians to perceive slight variations in pitch and make the corresponding adjustments in their own performance*" (Salzberg, 1980, 42). Interestingly, violinists rarely intonate to the equal temperament of the piano, except when playing in unison with it (Whitcomb, 2017), but rather use a mixture of Harmonic (Just) intonation and Melodic, (Pythagorean) intonation (Sassmanshaus, 2012; Keyes, 2013; Whitcomb, 2017). Harmonic/Just intonation has a ratio of 5:4 for major thirds, meaning that against a pitch of 400 cycles per second, a major third is 500 cycles (Whitcomb, 2017). This type of intonation is used in chordal passages and in string quartet playing. It can be differentiated by its slightly lower thirds compared to Pythagorean, where the major third has a ratio of 81:64 (Siljestam, 2013) and is also characterised by narrow semitones and large tones (Sassmanshaus, 2012), since it is based on the tuning of fifths (3:2) and octaves (2:1). This type of intonation is used in solo playing in order to give melody direction (Whitcomb, 2017).

Thus, the intonation used by professional violinists has a range that can be measured from equal temperament. Our previous study found that intonations of four professional violinists displayed very few notes under equal temperament – the lowest being about -18 cents, based on a semitone being split into 100 equal parts. More frequently, the intonation would be raised, being influenced, perhaps by the tradition of *Pythagorean* intonation in solo playing. The highest intonation detected in the sample was +46 cents. This data is useful when assessing student intonation, since it provides

a concept of the ideal range of violin intonation. A reduction in both overall range of intonation and the number of notes with intonation below zero in equal temperament pre-versus post-mental training can indicate an improvement in intonation, therefore.

From analysis of the combined literature in neuroscience, pedagogy, mental training and violin pedagogy, it can be inferred that a mental training routine aiming to develop auditory-motor processes for the improvement of rhythm and intonation should include:

- Aspects of ease and personal relevance, to facilitate the neural processes connected to learning and increase personal interest in the subject content;
- Reduction of teacher verbal instruction, to reduce interference and assist in creating the student's personal mental model;
- Auditory stimulus alternated with practical realisation, to facilitate the creation of predictive motor and auditory mental imagery;
- Shifting the focus of the beat, to assist in creating an awareness of each note, and how to prepare for the forthcoming note(s);
- Incorporation of reading from musical notation, to assist in connecting auditory imagery of the required sound to the visual perception of the written notation.

Methodology and Sample

In order to assess the effects of mental training on the development of pulse and intonation, it was necessary to collect relevant data pre- and post the mental training conditions. Initial analysis was carried out using the software *Melodyne 4*, running on a Macbook Pro. IBM SPSS Statistics 21 was used to conduct statistical analyses on the data collected.

The software *Melodyne 4* has the following functions relevant to the analysis of both intonation and rhythm:

- Detection of the overall tuning of the recording, adjusting to the individual tuning of the violin – i.e. whether A4 is tuned to 440 hz or 444 hz, etc;
- Distinguishes the pitch of each note played;
- Measures the distance that each note deviates from the same note in equal temperament (the measurement is made in cents, each semitone being split into 100 cents);
- Detection of average metronome pulse for a section, or for a selected note as selected by the user.

Nine violin students from classes 3 to 8 (=average age 11) from Cesis' First Primary School participated during their scheduled violin lessons. Duration of each lesson: 20 minutes.

The two mental training routines developed for this study were introduced in separate lessons, due to time constraints. The routines occurred after the lesson's introduction and verification that the students' basic needs had been catered for.

The students had not previously used these two mental training routines, though they had participated in a different mental training routine in the previous month. Whilst

they were used to experimentation in lessons, the processes involved in these new routines had not been carried out previously. Additionally, the routines were not described as being ‘mental training’, since the terminology had not yet been introduced.

Baseline Measurements

Baseline measurements taken before the first and second mental training routines reveal that the students’ ranges of intonation are wide (see Tables 1 and 2), which was also noticeable audibly during their playing. Therefore, a reduction in range would be an indicator of an improvement after mental training. Additionally, the intonation that is below zero in equal temperament needs to be raised and the intonation that reaches over about +45cents needs to be lowered, to be closer to the intonation used by professional violinists.

Similarly, the ranges of tempo in the baseline measurements show broad ranges of tempo, indicating that a concept of pulse had not yet been grasped by the students (see Tables 1 and 2). Indeed, their playing could be described as being “unsure” or lacking in fluency.

Table 1. Range of intonation and rhythm of students before the mental training routine “My note your note”

Student	1	2	3	4	5	6
Minimum Intonation (cents)	-47.00	-132.00	-102.00	-98.00	-51.00	-49.00
Maximum Intonation (cents)	116.00	42.00	8.00	2.00	39.00	12.00
Range of Intonation (cents)	163.00	174.00	110.00	100.00	90.00	61.00
Minimum Tempo (bpm)	3.00	14.08	50.04	19.49	40.96	27.77
Maximum Tempo (bpm)	58.42	143.54	107.20	115.35	304.00	128.01
Range of Tempo	55.42	129.46	57.16	95.86	263.04	100.24

Table 2. Range of Intonation and tempo of students before mental the training routine “fingers and thumb”

Student	1	2	3	4	5	6
Minimum Intonation (cents)	-102	-76	-160	-72	-112	-111
Maximum Intonation (cents)	21	50	30	518	107	63
Range of Intonation (cents)	123	126	190	590	219	174
Minimum Tempo (bpm)	39.260	27.6	30.45	16.56	13,71	45.190
Maximum Tempo (bpm)	88.970	110.820	85.73	86.39	71.8	157.58
Range of Tempo	49.710	83.220	55.280	69.83	58.090	112.39

Most students played the initial excerpt already from the musical notation, however, there were some students that generally preferred to try and play by ear. Whilst this

perhaps indicated a good aural ability, it was noticeable that these students lacked a clear understanding of the exact rhythm and sound of the notes, which impeded fluency.

Mental training routines

Based on the conclusions from the analysis of the literature, two mental training routines were devised. The first was based on the literature connected to rhythm – on the alternation of action and anticipation, plus the shifting of awareness from one note to the next. It is conducted with the instrument in hand. The second routine was designed for developing awareness of intonation and is conducted away from the instrument, providing an introduction to the concept of mental rehearsal used by more experienced players. Both exercises were also based on the literature that supports the enhancement of mental imagery with movement and both included an element of perception, where more traditional mental training with experienced players may engage imagery alone.

Metaphoric imagery was used at the beginning of each mental training routine replacing the progressive relaxation found at the beginning of mental training exercises with more experienced players, students were encouraged to create their own imagery, to assist in relaxing the muscles of each hand thus creating more personal relevancy. It was also designed to expand of the concept of ease, identified as being helpful in learning.

Whilst the routines were designed to involve teacher-student collaboration, both routines were also designed to reduce teacher instruction, in order to reduce interference of student thought processes, and to assist the student to build his or her own cognitive processes.

First routine: “My Note Your Note”

Designed to bring to awareness pulse and rhythm, this routine involves selecting a musical phrase of two to four bars, depending on the difficulty or tempo of the passage, so that the student feels comfortable with the length of the excerpt. The routine was designed to be carried out whilst reading the notes from the musical score and consists of five parts:

1. Initial playing of the excerpt by the student (from which the baseline measurements were derived);
2. The phrase is divided between teacher and student: the teacher plays one note, the student plays the next (see figure 2): the whole phrase is complete in this manner;
3. The process is then reversed: the student starts with the first note and the student plays the next;

Etude

Franz Wohlfahrt, Op. 74, No. 5

○ Teacher
□ Student

Figure 2. "My Note Your Note" alternation of teacher and student playing

4. The student alone plays the whole excerpt as in step 1;
5. The student describes the differences they noticed between stage 1 and stage 4 and is encouraged to comment on the routine itself.

Second routine: "Fingers and Thumb"

1. Initial playing of the excerpt by the student (from which the baseline measurements were derived);
2. Without the violin, the student is asked to make a ring-shape against the thumb, using the correct fingers as required by the musical score. At the same time, the student sings the finger names at the same pitches as notated in the musical score. The teacher does the same in unison with the student;
3. The student takes the violin and plays for a second time;
4. The student is asked to reflect on the differences noticed between stages 1 and 3 and to comment on the exercise itself.

Teacher Observations during the Mental Training Routines

At the beginning of the *My Note Your Note* routine, students had a tendency to hesitate as per the first play-through, but after the student had found the note and played in confidently, the teacher continued with the next note in the same pulse that had been established at the beginning of the routine. This was carried out in accordance with the literature which revealed that the understanding of pulse, which includes its prediction, gets modified and adjusted in real time, during the process of pulse perception. Students indeed, reacted by playing the next note more accurately in the tempo as implied by the teacher's playing and therefore also the tempo that had been established at the beginning of the routine.

During the *Finger and Thumb* routine, some of the students were reluctant to start singing at first. However, since the teacher was singing and doing the exercise along with the student, most students began to sing after the first few notes. Additionally, students did not always produce a ring-shape with the fingers and thumb, but an ellipse. This was brought to attention by the teacher at the beginning of the routine. The students were then encouraged to place the fingers against the thumb, in the same way as they would place the fingers upon the fingerboard of the violin: to create a virtual image of the feeling of the violin in the hand. An additional observation during the second routine, was that the students seemed to work on slightly shorter passages than in the first routine, which was possibly due to the fact that it was a new and unusual activity, to "*imagine playing the violin,*" or possibly that they felt more motivated after the imaginary condition to pick up their instruments to see how it would sound again for real. In short, the students showed increased motivation to pick up their instruments and start playing.

Results

A. Comparison of the results before and after mental training

Routine 1: 'My Note Your Note' results

Whilst there were audible improvements in fluency, a Wilcoxon Signed-Ranks Test confirmed that four out of five students had statistically significant differences in tempo pre-versus post- mental training (see Table 3). As predicted, the routine assisted in developing a sense of rhythm and pulse, more than intonation. However, student 4, whose rhythm had not statistically changed ($Z = -.604, p = .546$), showed a statistically significant change in intonation ($Z = -3.502, p < .01$), indicating that for some students, the mental training routine may bring concepts of intonation into awareness more than rhythm.

Table 3. Wilcoxon Signed Ranks Test before and after mental training routine 1 'My Note Your Note'

		Test Statistics ^a	
STUDENT		Intonation after – Intonation before	Tempo after – Tempo before
Student 1	Z	-.991 ^b	-2.484 ^c
	Asymp. Sig. (2-tailed)	.322	.013
Student 2	Z	-1.888 ^c	-2.482 ^c
	Asymp. Sig. (2-tailed)	.059	.013
Student 3	Z	-1.733 ^c	-2.657 ^b
	Asymp. Sig. (2-tailed)	.083	.008
Student 4	Z	-3.502 ^c	-.604 ^c
	Asymp. Sig. (2-tailed)	.000	.546
Student 5	Z	-1.925 ^b	-2.971 ^b
	Asymp. Sig. (2-tailed)	.054	.003
Student 6	Z	-.991 ^c	-4.166 ^b
	Asymp. Sig. (2-tailed)	.322	.000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks

c. Based on negative ranks

Applying the Wilcoxon Signed Ranks Test on the data from all six students together revealed that both intonation ($Z = -2.084, p = 0.37$) and tempo ($Z = -2.644, p = 0.008$) had significantly changed pre- versus post- this mental training routine, though evenness of tempo showed a greater overall improvement.

Routine 2: 'Fingers and Thumb' results

Audible improvement of intonation was noted, especially on the notes that were completely inaccurate in the first play-through (stage 1 of the mental training routine).

This was reflected in the reduction of ranges of intonation pre- versus post- mental training routine in four out of five of the students (see Figure 3).

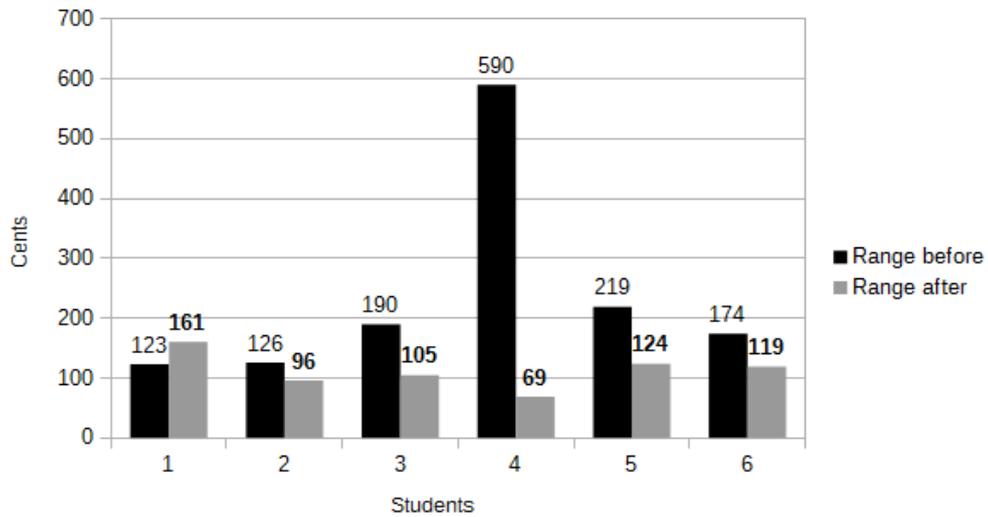


Figure 3. Ranges of intonation (in cents) pre- and post- mental training routine 2

Comparing the means and the standard deviations for intonation pre and post the 'Finger and Thumb' routine, it is possible to conclude that intonations for five out of six students had become more neatly placed around their personal average (mean) intonation, that intonation was becoming more controlled (see Table 4).

Table 4. Mean and standard deviations: Intonation before and after routine 2

Descriptive Statistics

STUDENT		Mean	Std. Deviation	N
Student 1	Intonation before	-30.59	35.166	17
	Intonation after	15.24	38.983	17
Student 2	Intonation before	-28.82	31.726	17
	Intonation after	-11.35	29.776	17
Student 3	Intonation before	-44.97	47.381	29
	Intonation after	-30.14	27.364	29
Student 4	Intonation before	12.71	146.839	14
	Intonation after	-18.93	18.951	14
Student 5	Intonation before	-11.89	82.829	9
	Intonation after	15.56	39.154	9
Student 6	Intonation before	-8.55	30.400	40
	Intonation after	-11.50	23.854	40

A Wilcoxon Signed-Ranks Test applied on the combined data for all of the students revealed that overall intonation for all of the students showed a significant difference in intonation pre- versus post- the mental training routine ($Z = -4.000, p = 0.000063$)

compared to tempo ($Z = -1.586, p = 0.113$), the differences pre- and post- mental training routine for each individual student revealed only two students displayed individual statistically significant results (see Table 5). This may have been caused by the shorter musical excerpt included in this study, creating fewer data.

Table 5. Wilcoxon Signed-Rank Test: Intonation before and after routine 2, individual students

STUDENT		Test Statistics ^a	
		Intonation after – Intonation before	Tempo after – Tempo before
Student 1	Z	-3.623 ^b	-.536 ^c
	Asymp. Sig. (2-tailed)	.000	.592
Student 2	Z	-1.603 ^b	-.876 ^c
	Asymp. Sig. (2-tailed)	.109	.381
Student 3	Z	-2.335 ^b	-.865 ^b
	Asymp. Sig. (2-tailed)	.020	.387
Student 4	Z	-.944 ^b	-1.160 ^b
	Asymp. Sig. (2-tailed)	.345	.246
Student 5	Z	-.949 ^b	-2.194 ^b
	Asymp. Sig. (2-tailed)	.343	.028
Student 6	Z	.000 ^d	-.921 ^b
	Asymp. Sig. (2-tailed)	1.000	.357

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks

c. Based on positive ranks

d. The sum of negative ranks equals the sum of positive ranks

B. Student reflections

The final stage of each mental training routine included student’s commentary. Many of the students were surprised to find the routines had made playing the relevant sections of repertoire easier. Some of them remarked that it was simply ‘good’. One of the students asked: *“How did that happen? That section is so much easier now!”* When the same student was asked why this is so, the student replied that it is not really possible to describe it in words and that *“I just seem to know what to do next”*. Another student said that the music was now more understandable. Overall, comments were positive.

Discussion

The mental training routines in this study were designed to include aspects of perception, combined and/or alternated with physical realisation and imagery, in order for the students to gain an experience that could form the basis for later use of imagery.

It was noticeable that in the months following the mental training routines whilst students were waiting for their lessons, they started to read their musical notation with or without the instrument in hand, and engage in silent practice. This was not previously observed before the mental training routines had taken place.

The statistical results of the mental training routines are interesting, whilst the results for the rhythm fairly accurately reflected those observed in the classroom, the statistics seems to reflect less strongly the effects noted by the teacher on intonation. That is, improvements in intonation seemed much greater to the ear compared to the significance that statistical analysis revealed. This suggests that statistical analyses may not reveal the full picture concerning intonation, especially the analyses that are based on mean values, since a student may play with intonation that is both very high (measured by cents in positive values) and very low (minus values), creating a mean value that could actually be in the same range as the mean value of professional violinists. Listeners, however do not average out the notes that they are listening to in a performance, but rather listen to each note individually. Even one or two notes played incorrectly may disrupt an otherwise enjoyable performance. Overall range, therefore, which is less strong statistically, is perhaps one measure that can assist in representing the human experience of intonation, as is, the standard deviation from the mean, as cited in the present research.

Conclusion

Results indicate that the different types of mental training routines can indeed assist in improving aspects of rhythm and intonation separately. That alternation of perception and action can improve rhythmic components of playing, suggests that purposefully exteriorisation of inner mental processes can assist in this process. That intonation can be improved through a combination of mental imagery; vocalisation and movement away from the instrument may indicate that intonation is as much cognitive as it is practical. Generating personally-relevant imagery for achieving a feeling of ease may also have facilitated more efficient mental and physical processes connected to playing.

Future studies could explore combining the two mental training routines in the one session and perhaps also on the same passage of music, though this may require longer lesson durations.

The results support the hypothesis that mental training routines can be designed to improve rhythm and intonation separately in the primary school violin teaching and learning process.

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