Learning strategies in ear training

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Abstract

The purpose of this article is to discuss learning strategies in ear training, and the aim is to explore how focusing on the ways the students learn can provide valuable information about learning and teaching ear training. The article will review present knowledge about learning strategies across fields of research. Literature regarding studies of strategies in music acquisition, and strategy use in expert performance will be described. It is argued that studies of learning strategies require more attention in music education research. The second part of the article discusses implications for teaching and learning ear training.

Keywords: ear training, learning strategies, music literacy, music dictation, music listening

1. Introduction

"They can but bringe horse to the water brinke, but horse may choose whether that horse will drinke" (English proverb). A basic goal in music education is to teach students to be self-sufficient in acquiring new skills and knowledge. In order for students to *"choose to drink",* they need to be able to regulate their own learning processes. One of the significant differences between a novice and an expert is whether or not they are approaching their goals efficiently and *strategically*. Research in different domains show that successful learners are strategic, and they engage actively and creatively in choosing and using strategies (Bandura 1986, Bråten 1996, Chamot 2004, Paris et al. 1983, Siegler 1996).

There is a general agreement in research that in order for students to plan and regulate their own learning processes they need a fundament of *knowledge*, *motivation* and efficient *learning strategies* (Alexander 1997). The three factors are regarded as interdependent, so if students for instance lack motivation, their learning strategies

would probably be less persistent. For music students, strategic behaviour is often directed primarily to performance on their instrument. This often means that other educational subjects such as ear training and music theory might have a lower priority; consequently the knowledge, motivation and learning strategies tend to be less focused in these areas.

Learning strategies are the thoughts and actions that students undertake to achieve a specific learning goal. Identifying and teaching what is known to be effective learning strategies is one of the most essential tools for the teacher in order to help students in becoming proficient musicians. This calls for the teachers' awareness of the students' learning processes, and ways to address these: "Good teaching includes teaching students how to learn, how to remember, how to think, and how to motivate themselves" (Weinstein & Mayer 1983:3).

Teaching strategies in ear training has had some attention both in the form of literature about teaching methods, and in research concerning ear training and sight-reading (Blix & Bergby 2007, Karpinski 2000). *Learning strategies* in music students' ear training practice is, on the other hand, quite rare in music pedagogical research (Lake 1993, Potter 1990).

The topic of this article is *learning strategies in ear training*, and the aim is to explore how focusing on the ways the students learn can provide valuable information about learning and teaching ear training. The first part of the article will review what we know about learning strategies across fields of research, and the second part will examine the implications for ear training teaching and learning.

2. What do we know about learning strategies?

The bulk of research on learning strategies shows that the use of self-regulated strategies plays a vital role in learning and developmental processes (Bråten 2002, Chamot 2004, Oxford 1990, Paris et al. 1983, Siegler 1996, Weinstein & Mayer 1983). Good learners use a larger number of strategies than poor learners, and they use them more effectively. Research also shows that strategic learners are better at choosing the most appropriate strategy in order to solve a given task. Strategic learning is embedded in developmental and instructional factors, and has strong connections to the learner's motivation and knowledge base.

Learning in this article is seen as active meaning-making processes, which implies that the learners participate and actively engage in their own learning procedures. From a socio-cognitive point of view, development of self-regulation is also regarded

as a process from imitation to independent problem solving (Bandura 1986, Bruner 1996, Dreyfus & Dreyfus 1986). In the last three decades, learning strategies has been considered one of the most prominent factors of self-regulated learning. Chamot (2004) sums up the characteristics of a good learner:

> Strategic learners have metacognitive knowledge about their own thinking and learning approaches, a good understanding of what a task entails, and the ability to orchestrate the strategies that best meet both the task and demands and their own learning strengths (ibid. p. 14).

Expertise studies show that strategic behaviour is best aided by the learner's knowledge about their own learning, and *metacognition* is a major research topic in education. In this regard, the teacher's job is to empower the students, and make sure they grasp the meaning of the tasks (Kletzien 1991, Strømsø 2001). In order to know how students think about their own thinking processes, the teachers need to have an explicit communication with the individual student regarding their thoughts on learning processes. We also know that a high level of expertise involves an enhanced awareness of one's own strategies. Successful music students are, for instance, highly strategic regarding practicing their instrument, and are well capable of reporting self-regulatory behaviour (Nielsen 1998).

2.1. Defining learning strategies

In this article, the term *learning strategy* is used for the "operations employed by the learner to aid the acquisition, storage, retrieval, and use of information" (Oxford 1990:8). The term *strategy* in research is still regarded "fuzzy", as it can contain different meanings and be used in different ways (Griffiths 2004). In the 1970's, the concept of strategy was mainly used to study the cognitive aspects of an individual's information processing. Today we see broader definitions that include social and cultural factors that affect the way learning strategies are categorised in different research areas. Definitions that take a broad view normally look at mental and physical behaviour in the light of social and affective factors (Oxford 1990).

Another issue is the *intentionality* of the strategies; is it a strategy only if it is a *deliberate* attempt to achieve a specific goal, or can strategies that are less purposeful be considered attempts to understand and acquire a skill or knowledge? Studying young children's strategies, for instance, would benefit from a definition of strategies that also consider less conscious actions as strategic (Blix 2012). In studies of strategies in ear training in university level students, on the other hand, a definition

of strategies should imply that the aim of the tasks normally demands conscious thoughts and actions.

Whether or not an action is strategic when it has become automatized is a related discussion in strategy definitions. Afflerbach et al. (2008) distinguishes between *strategies* and *skills* in language reading. When a behavioural pattern is automatic, it is considered a skill: "(…) the same action could be either a skill or strategy, depending on the readers' awareness, control, intention and the specific reading situation" (ibid. p. 369). When actions have become automatized, they usually are more difficult for the learner to identify and describe.

Because of these different aspects of definitions, it is necessary to clarify the term *strategy* in accordance with the individual research study, and also to differentiate between learning strategies in general and specific reading strategies, writing strategies and listening strategies, depending on the research subject. Common for most strategy definitions is that strategies are, at some level, directed at a specific goal, and that they are actions that the individual chooses in order to achieve the goal.

2.2. Factors that influence strategy use

> The skilled learner regulates the use of different procedures in order to achieve different learning results based on characteristics of the learner herself, and characteristics of the tasks (Nielsen 1998:2, my translation).

Factors that are known to affect strategy use are the learners' motivation, the characteristics of the task, the learners' background and learning style, the learners' task comprehension, and the ways strategies are chosen.

The way the students choose among strategies (procedure knowledge) is one of the factors that determine to what degree the students will succeed in their professional development (Kern 2000). To have an "arsenal" of different strategies and to use the most effective of them in different situations and contexts is considered a significant difference between good and less good learners (Siegler 1996).

Strategic learners that are able to use and choose from multiple strategies, and adjust the strategies according to different tasks, learn faster and better (Kletzien 1991, Strømsø 2001). Research also shows that *comprehending the task* at hand is a significant factor for choice and efficiency of learning strategies. If the learner is confused or indifferent about what the task really is, or what the aim of the task is, the learning outcome will probably be poor (Blix 2012). If an ear training student is not

sure whether the dictation task is about remembering the musical sound, or writing a proper score, it affects the student's choice of strategies.

Another factor that affects learning and strategy use is each learner's individual *learning style*. Both the learner and the teacher should acknowledge that we have personal preferences in our approaches to new knowledge and skills. Different preferences can contain sociological, physical, psychological, environmental and emotional elements. Thus, some students learn better by analysing in a quiet environment after a meal, while others prefer to work in groups and with a global perspective on the tasks (Dunn & Dunn 1999). Whether we prefer an auditory, visual, tactual or kinaesthetic approach is also found to differ from person to person.

2.3. Different research approaches to learning strategies

Across research fields, we see four main approaches to the study of learning strategies. First, we have studies that are designed to *identify* strategies that students or experts use (Jørgensen 1997, Oxford 1990). Second, there is a diversity of studies that aim to measure the *effects* of different strategies (Griffiths 2004). Third, some studies look at the effects of strategy *instruction*. Finally, studies on *strategy choice* have gradually become a focus of investigation (Nielsen 1998, Strømsø 2001). In ear training, there are to my knowledge very few studies that are set out to identify strategies, but learning strategies in music in general has been studied and discussed, some of which have implications for ear training practice (Blix 2012, McPherson 2005).

In language learning and mathematics, researchers and educators use standardized questionnaires to register what types of strategies learners use, and how effective they appear to be. Other methods of investigation are observations, self-reporting and interviews of informants, especially when strategy identification is the purpose of the study.

2.4. Taxonomies/classifications:

Today we see various ways of classifying strategy use in research. Depending on the field of research of the study, and the object and question of the study, researchers choose different strategy classifications. In studies of cognitive strategies, taxonomies distinguish between *cognitive strategies* (rehearsing, elaborating and organizing) and *metacognitive strategies* (planning, monitoring and regulating) (Weinstein & Mayer 1983).

Rubin's studies of language learning strategies represent an early strand of investigations of learning strategies (Rubin 1975). She identified six types of what she

called direct learning strategies: clarification/verification, monitoring, memorising, guessing/inductive inferring, deductive reasoning, and practice.

Deriving from Oxford's categories, a standardization of taxonomy has been developed in the second language research field, and a commonly used taxonomy of strategies in this field is affective, social, metacognitive, cognitive, memory, and compensation strategies (Oxford 1990). Compensation strategies are included as recognition of strategies that are not directly productive, but that can function as transitions towards better strategies. *Guessing* can for instance be considered a fruitful strategy for some purposes (flow, logical intuition, etc.), but in other cases be counter-productive (tests, playing concerts).

Today we see standardized questionnaires that are designed to investigate strategy use (SILL[1]) based on Oxford's taxonomy. In most cases, classifications of strategies have sub-categories that are domain-specific and applied in order to harmonise with both the features of the strategy users (age, skills and knowledge), and the tasks at which the strategies are aimed. Domain-specific strategies for adding two numbers in mathematics will for instance not apply in music dictation.

In music learning, there is a thread of research that investigates rehearsing strategies (Hallam 1997, Jørgensen 1997, Nielsen 1998). Several of these studies use strategy categories based on attuned versions of Weinstein & Mayer's taxonomy. Categories in these studies focus on the students' proficiency in analysing, planning, executing and evaluating tasks (Weinstein & Mayer 1983).

Jørgensen (1997, 2004) differentiates between task-specific and task-independent strategies, and proposes a taxonomy for practice strategies that is based on an assumption that practicing an instrument can be viewed as an analogue to teaching. Jørgensen proposes the following classification of practice strategies: a) planning and preparation strategies, b) executive strategies, c) evaluation strategies, and d) meta-strategies (strategies where the aim is to develop and monitor strategies) (Jørgensen 2004). The self-teaching phases *planning/preparing, execution and evaluation* can readily be applied to ear training practice.

2.5. Learning strategies in music research

One of the challenges in strategy research is that the strategies the students use are not always visible. In ear training practice, a student might *say* that she is memorizing a melody by analysing it in accordance with harmonic structures, etc., but how

1 SILL (Strategy Inventory for Language Learning) was developed by Oxford (1990), and is used in research studies of language learning, and in educational mapping of strategy use.

can we be sure that this really is the case? In order to gain knowledge about how music students learn, different research designs have been used to study strategic behaviours. Nielsen (1998) performed a case study of two advanced level organ students that reported their learning strategies in practice sessions. The students were observed while practicing, and in addition, they reported their thoughts on how they approached the music in order to improve performance. The findings showed that the students were proficient in setting goals, planning strategically, self-instruction and monitoring their own progress (ibid.).

We also find a few studies that look at children's learning strategies while learning to play an instrument. McPherson (2005) performed a three-year longitudinal study of the manner in which children (age 7-9) acquire musical skills in their instrumental training. The aim of the study was to look at the mental strategies the children used, and the amount of practice each child performed. The results showed that the quality of the mental strategies that the children used during their first years of training served as a significant explanation for the fact that some children succeed and some fail in instrumental training (McPherson 2005:5). Observations, interviews and records of practice hours constituted the fundament for analyses of use and quality of mental strategies. McPherson found that the quality and refinement of the mental strategies the children employed was essential for their musical development.

> It is proposed that a more coherent explanation of learning to perform on an instrument comes from understanding what children are thinking as they process music visually and aurally, and that the sophistication of their mental strategies provides an important means of understanding why some progress effortlessly in contrast to others who struggle and fail (ibid. p. 31).

The strategies McPherson found were categorised according to the different tasks used in instrumental training and were organised in five main categories:

- Organisational strategies (keeping track of what is to be learned, decide the most effective order of practice tasks)
- Improvement strategies (practising to improve, self correction strategies)
- Sight-reading strategies
- Playing from memory strategies
- Strategies for playing by ear

The last two categories were each divided in conceptual, kinaesthetic and musical strategies, where the musical strategies seemed to be the most productive. The

children that used musical strategies were capable of linking the sound of the melody to the instrument by mentally rehearsing it, and showed a capacity for coordinating ears, hands and eyes. It is important to notice that the taxonomy of strategies was closely connected to the specific learning context and the age of the informants, and to the different tasks that playing an instrument involves.

The PhD-project *Emergent music literacy* is another study that focused on young instrumentalists' learning strategies (Blix 2012). The study was designed to identify learning strategies that young beginners on music instruments used to acquire music literacy. Four cases formed the empirical basis for the study: two flute students and two trombone students (age 7-8). Observations and interviews were conducted over a period of nine months. The findings suggested that children differed to a large degree in their strategy choices, and that the individual student relatively seldom changed the preferred types of strategies that they tended to use during the observed period. This implicated that in order to change strategy use, there is a need for an extra effort, and a possibility to practice these strategies in context. In addition to cognitive, social, memory and listening based strategies, a great deal of support strategies that the children used to compensate for lack of knowledge and task comprehension were also registered (Blix 2012). Of relevance for ear training is both the discussion of the connection between the musical sound and the written music, and that strategy use is a skill that needs to be consciously made and explicitly practised.

Research on *practice strategies* in music performance is a field that has provided knowledge of how experts plan and monitor their learning processes (Hallam 2001, Jørgensen 2004, Nielsen 1998). Some of these studies also discuss strategies related to ear training as a central part of practice strategies while preparing for music performance (Hallam 2001):

> The findings indicated that effective strategy use in practice depended on the acquisition of appropriate aural schemata to facilitate the monitoring of progress and correction of mistakes. Strategy development was closely related to the developing level of expertise (ibid. p. 7).

In the book *Musical Excellence*, Thompson and Lehman (2004) discuss sight-reading and improvisational strategies. They review research on sight-reading and improvisation, and propose ways to address the two skills strategically. They stress the importance of knowing the style according to which you are supposed to read or improvise. This knowledge can be acquired through listening, playing and reading the style in question, analysing and reflecting upon characteristics of the music. They also recommend that one prepare for reading by looking through the music before

playing. For improvisers, they emphasize the importance of "having a large stock of style-specific knowledge" (ibid. p. 151). They also recommend *singing* as a way to acquire a *knowledge base*:

> A common frustration of learning to improvise or sight-read is having a strong idea of what you wish to play, but being unable physically to find the notes. Ultimately, of course, perceptual and cognitive skills will have to meet with motor skills in order to produce a successful improvisation or sight-read performance. (…) Try sight-singing, or singing an improvised melody line (ibid. p. 154).

Literature concerning learning strategies in music education is often aimed at advising students and teachers how to learn and teach effectively through strategic behaviour. Strategies suggested by ear training teachers, and instructional literature, focus on developing general music acquisition skills, represented by both general and specific approaches to different areas in music learning.

3. Implementing learning strategies in ear training practice

It takes a lot of effort to learn something new, especially to change habits that are related to practical tasks. Many adults have the habit of counting on their fingers when they are adding numbers, especially when they are supposed to respond fast and accurately. They do not really trust calculating in their head, even though it works fine. Intellectually, we know that this is a strategy that takes time and is less effective than retrieval, but in the midst of a stressful situation, this seems to be a safety net for the addition skills. In ear training lessons, we often see the same type of compensatory strategies used by students, and which results in slow progression and musical development.

Students that are used to a specific way of thinking and acting when they approach music can have a hard time changing their habits and trusting other strategies to be better. Moreover, even if they know that there are better approaches, it demands much effort to convince themselves to change tactics. The students "inherit" some strategies from previous learning contexts, without considering the quality of the strategy:

> (…) strategies may be *adopted* by teaching musicians and passed down to further generations without questioning whether these strategies are *adapted* to the needs of their students. Consequently, it is an important task

> in the education of instrumental teachers to support student's conscious awareness about their own strategies (Hultberg 2008:9).

Ear training consists of many different tasks and goals, and calls for task specific strategies. It is crucial when we discuss learning strategies in ear training that we are aware that the tasks need to be well defined, and the purpose of the tasks must be explicit.

In 2012, we carried out a project where ten students at a music conservatory were asked to report strategy use in music dictation (Blix 2012, unpublished). The students received e-mails including a midi-file containing a short piano piece (fig.1). They were asked to write down what they heard, listening as many times as they wanted, and, in addition, to monitor their own learning processes. The students were asked to consider the following questions during the assignment:

1. Transcribe the piano piece you hear.
2. When you solve this dictation task, consider the following:
   a. Register what kind of strategies you use to solve the task.
   b. Describe the strategies.
   c. What kind of strategies had effect, and which strategies did *not* have an effect?
   d. Did it have any effect on the work process that you were conscious about your strategy usage?

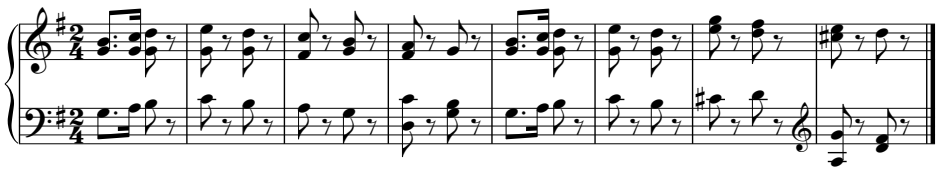

Fig.1: R. Schumann: Soldiers March from Album of the Young Op. 68 no. 2.

Prior to the assessment, the students had discussed learning strategies and practiced different approaches to dictation exercises. The written answers from the students varied in insight and level of detail, but all the students reported an altered focus on their own approaches to this type of task. The students received the score after they had performed the task in order to evaluate their own results.

Student 1:
Most of the time I listen to one voice at the time, and I do not think about the harmonic structure.

In general I don't think about the harmonic structure, because I'm not used to that, but I realized during this assignment that hearing the chord progressions would have helped me.

I found that it was helpful to have a plan for *the way* I approached the task. It helped a lot.

Student 2:
I sing and try to find structures in the melodies that "make sense".

I wouldn't say that the strategies didn't work, but there are certain strategies that I don't quite master yet.

It's definitely helpful to know what procedures I should use. Very smart.

The students' reports showed that there was a discrepancy between the knowledge of good strategies and the tendency to use them. This indicates that acquiring effective strategies requires practice and repetition with special focus on each of the different approaches in order for them to be internalised (Blix 2012, Jørgensen 2004).

This type of *reflective writing* had further strategic consequences because the students were invited to bring metacognitive strategies to the table (Bråten 1996, Jørgensen 2004, Nielsen 1998, Siegler 1996). The experiences from the project indicated that reflective writing would be an advantageous teaching strategy also in other parts of music education (Davidson et al. 1995).

The students also reported which of the strategies was not productive. Some of them concluded that listening to one voice at a time, or just listening many times, did not really work. One of the students said that he used his instrument too much, so he did not really feel that he had *heard* the music he wrote.

The majority of strategies were of a cognitive nature, with emphasis on structural listening. The students reported attempts to analyse and make sense of the structures of the music. They also made meta-cognitive reflections of their own strategy use, often comparing them with strategies they had learnt in class. The results of the project correspond with Potter (1990) who studied successful dictation strategies in skilled musicians, and Lake (1993) who performed a study of music students' interval and scale-degree strategies in melodic perception. Both studies conclude that flexibility in strategy use is important, but the choices the individual student make within the range of useful strategies must be conscious and task appropriate.

In the following, I will discuss learning strategies in ear training, using the main categories from Oxford's taxonomy as a point of departure, but with additional subcategories adapted to the specific tasks and aims of ear training and music education.

3.1. Cognitive strategies

Cognitive strategies are approaches that relate to the way the learner administrates their own learning. This includes strategies such as analysing, comparing, chunking, verbalising, and looking up information. Analysing musical structures is emphasised in several studies as a main strategy for many different musical tasks (Hallam 1997, McPherson 2005, Nielsen 1998, Wolf 1976).

Examples of cognitive strategies used in different ear training tasks are *analysing* musical sound in terms of theoretical categories (chord names, musical form, rhythm structures and scale degrees), or analysing notated music in order to improve performance. Wolf (1976) found that scanning for familiar patterns was one of the most prominent differences between good and less proficient sight-readers. This includes anticipating what comes next in order to keep the flow of reading; this also requires an adequate theoretical knowledge. Other tasks that benefit from the use of cognitive strategies can be intonation, improvisation and writing music.

Some students report that they are aware of the cognitive strategies they may use, but still use ineffective compensatory strategies such as guessing or avoiding the problem, especially in stressful situations.

Many ear training teachers would agree that a majority of the strategy instructions given in ear training practice focus on cognitive approaches. To be able to develop your inner ear, you need to relate to some type of analytical process that enables you to decode and structure what you hear or see.

3.2. Auditory strategies

Auditory strategies concern the ways we strategically approach music by listening in different ways. Strategies that involve different ways of listening can be observed in many parts of music education, and in ear training lessons these strategies can be addressed without having an instrument on which to concentrate at the same time. Auditory strategies can involve moving your body to music, listening to different aspects of musical sound, listening to your own performance, discriminating sound in different ways, and listening several times in order to establish an inner "imprint" of the sound. In language learning, children read aloud the first years of learning in order

to establish an inner reading voice. Singing aloud might also be considered an auditory strategy if the goal is to establish an inner voice as a result of the singing exercises.

In ear training lessons, there is also a call for tasks that initiate intuitive responses to musical sound in order to practice listening skills. Sight-singing together with accompaniment is considered useful in this matter; the task can be to just "go with the musical flow", and then the strategy is related to *auditory strategies* as the listening is directed to the accompaniment.

The notion of *audiation* introduced by Gordon (1997) focuses on the connection between auditory approaches and cognitive strategies. "(…) when you are audiating as you are listening to music, you are summarizing and generalizing from specific music patterns you have just heard as a way to anticipate or predict what will follow" (Gordon 1997:5). Thus auditory strategies in ear training normally focus on ways of audiating in order to make use of the auditory feedback when performing:

> Successful performances can only be attained if the performer can structure significant units of information during processing and maintain a clear representation of the sound to which the performed sound can be compared in order to administer necessary performance adjustments (Banton 1995:15).

Focussing on what we really *hear* is demanding in many parts of musical life, and for music students, these are crucial skills that need to be practised. In ear training, the weight on tasks that requires cognitive strategies are often in the foreground, but tasks that focus on good auditory strategies are as vital and should be practiced systematically.

3.3. Metacognitive strategies

Metacognitive strategies are strategies that concern the way the learner reflects upon their own learning and thought processes. When the students in the mentioned dictation project explained how they evaluated their own thought processes, and how they could change their strategies, this was considered metacognitive behaviour. In order for a strategy to be metacognitive, it has to be focused on goals that are of a general character, such as strategically focussing attention towards your own learning processes.

Writing a journal or talking about how you plan to learn can be effective ways to be strategically aware of your own learning. A journal can contain reflections upon practice, evaluation, thinking processes, references to literature about learning or plans for the ways you will approach learning in the future.

Choosing the most effective strategies according to an assignment requires an evaluation process that requires metacognitive effort:

> In order to select a strategy as the appropriate one to apply in solving a particular problem, the individual must understand the strategy, understand the problem, and understand how the problem and strategy intersect or map together (Kuhn 1988:237).

3.4. Social strategies

Social strategies are actions that involve interaction with other people, such as asking for help or creating collaborative learning contexts. In my experience, students learn better if they are sitting close to each other in the classroom where they are able to help each other during the flow of the lessons. Misunderstandings can be cleared up, and knowledge can be exchanged. Some students ask many questions, and learn from them, while others have to be taught this type of strategic behaviour.

Seeking assistance from a teacher, asking questions for clarification or facts, or seeking peer assistance, for some students must be learned. Collaboration with peers can contribute to relieve tension and increase motivation for some students. Peers might understand the problem in different ways than the teacher, and might explain in other terms. The teacher should initialise these types of social strategies in the ear training class; thus empowering the students to create their own learning environment.

3.5. Memory strategies

Memory strategies are strategies that entail ways of memorising music. Many students report difficulties with memorising musical sound, not only in ear training. As future musicians or pedagogues, the ability to memorise music is regarded as an important skill. The tasks can vary from learning a piece by ear, playing from memory, or memorising a score.

Hallam (1997) conducted a study of strategies for memorising music. She asked 77 music-performing professional and novices about the different ways they undertook the task of memorisation of music for performance. Her findings showed that the learning processes normally were based on combinations of aural, kinaesthetic, and visual strategies. The professional musicians used analysis of the music to assist the memorisation processes. The novices tended to use few analytical strategies, and to

a larger degree use repetitions in order to memorise. Performing from memory also has anxiety issues, which was also addressed in Hallam's interviews.

In ear training, a main concern is how we can help students develop better strategies for memorising music. Recommended strategies often focus on chunking of familiar patterns, notating, visualising, fingering (pretending to play your instrument), singing and analysing the music. There should also be an explicit focus on the students' awareness of what strategies they use, and which of these are productive. These may differ from student to student according to each individual's preferred learning style.

3.6. Compensatory strategies

Strategies that enable the learner to compensate for limitations in knowledge and such skills are often referred to as *compensatory* strategies (Green & Oxford 1995). Guessing or other actions that are considered easy ways to solve the tasks may disturb the progress of learning. If a student uses fingerings on her instrument in order to remember a melody, this might be considered a compensation for poor auditory memorisation skills, if the goal is to memorise by ear.

On the other hand, there are several musical situations where guessing and taking chances are productive musical strategies. Thompson and Lehman state that in both sight-reading and improvisation one relies, to a certain degree, on qualified *guessing*. Anticipating what happens next, and then taking a chance, can also be regarded as a useful strategy in the development of musicianship (ibid. p. 155).

3.7. Affective strategies

Nielsen (1998) showed, in her study of music academy students, that self-efficacy is a significant factor regarding the students' cognitive and metacognitive involvement in their own learning processes. In ear training, *self-confidence* is an issue that can emerge across all levels of proficiency as musicians. For some students, ear training lessons can be experienced as stressful and uncovering of lack of musicality. Strategies directed towards mastering affective factors such as stress connected to tests, other students' opinions, or own musicality, are helpful in both ear training and in general as a musician. Practising for tests by imitating the test situation (being in the actual room, or having a critical listener) can be useful strategies in order to reduce stress.

Affective strategies can also be used to project positive feelings of musical flow, or actively using music one likes in ear training practice. A student can also use positive experiences with musical achievement in order to acquire a good ear.

The affective strategies must be seen in close relation to social strategies in ear training, as social behaviour requires self-confidence in order to approach other persons and to admit the need for help or instruction. Findings from language learning show that focusing on stress reduction, self-rewarding and self-encouraging can significantly increase the learning outcome (Green & Oxford 1995). It might take a lot of energy to manage feelings of imperfection and stress in ear training lessons, especially since it is a part of your education that is not the primary focus, but still is often perceived as a major part of your musical identity. These types of strategies have received relatively little attention in strategy studies in music.

4. Coda

A good teacher, good ear training lessons and good learning materials do not necessarily make the student better at inner hearing or at memorising music. "Even with the best teachers and methods, students are the only ones who can actually do the learning" (Griffith 2004). The effort that the student puts into the learning is as vital for learning as the teaching methods. The teacher's job in this regard is to facilitate the processes that help the student actively seek advice, methods and motivations.

The learner does not automatically apply new strategies just because the teacher says how the tasks best can be acquired. There can also be a discrepancy between the teacher's perception of what strategies are taught and the students' opinions of what strategies they have learned (Strømsø 2001). Explicit strategy instruction and practising the strategies are required.

In ear training classes, the students also need to have an awareness of the connection between the ear training practice and their musicianship in general. Ear training lessons normally aim at providing students with tools for developing "a good musical ear". More specific goals might be to be able to memorise music, to write down what you hear, to have a good *inner hearing*, and to be a good sight-reader.

> By investigating not only improvements in playing skill but also in students' acquisition of cyclical self-regulatory processes, music teachers will have much better sense of whether students can practice effectively on their own and whether they are being self-motivated to continue their musical development (McPherson & Zimmerman 2002:344).

Areas where future research may provide new and supplementary knowledge in ear training practice are numerous: What strategies do students actually use? What strategies do experts use, and what can we learn from them? What strategies in ear training do really have an effect on the development of a good musician or music teacher? How can we be so sure that the strategies teachers recommend really are the best for the students, and how do we recognize individual differences in order to adjust and differentiate our teaching?

This article has examined a series of issues in learning strategies in ear training that are vital for guiding students to be capable learners. Even though we have scientific knowledge about many aspects of learning and teaching strategies in music education, many areas still remain to be investigated.

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