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Young Instrumentalists' Music Literacy Acquisition

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ABSTRACT

The aim of this article is to present and discuss the findings of a research project concerning music literacy acquisition among young beginners on music instruments. The reported project examines the learning strategies that young students use in order to make sense of notated music in the first year of training. Theories from the research field of language learning are applied to illuminate music literacy as a learning process. Observations and interviews were used to collect data about students' learning strategies and music literacy development. The findings show that the students have quite different approaches regarding the use of strategies, both when it comes to what strategies they employ, which new strategies they acquire, and how many strategies they use. Young instrumentalists display creativity in their attempts to make sense of the music notation, and the music studio setting itself, using the multimodal tools that appear available to them. It is important for teachers to know how their students' learn, and how they reason, in order to assist their learning processes. The findings of the study shed light on central issues regarding the awareness of learning strategies in instrumental teaching. Following a discussion of the research results, recommendations for instruction and future studies are presented.

Keywords: Music literacy, instrumental learning, ear training, music reading, instrumental teaching, learning strategies.

Introduction

Understanding how to read and write music is a part of the curriculum for most young music students learning to play an instrument in a music school. Some of these students give up playing without really having learned how to read music, and studies show that poor music literacy skills can be one of the reasons why young musicians stop playing (Mills & McPherson, 2006, Gudmundsdottir, 2010). Teaching methods in music literacy, and instruction books regarding music literacy, have been discussed and investigated through research in different ways (Blix, 2006, 2012; Colwell & Richardson 2002; Nielsen, 1997; Rostvall & West 2001), but *the ways* children acquire knowledge and skills in music literacy have not been examined to the same degree (Gudmundsdottir, 2010).

In the last decades there has been a considerable number of studies focussing on the ways students regulate their own learning processes through *learning strategies*. The research show that successful learners are more strategic, goal-oriented, and aware of their own *ways* of learning (Griffiths, 2004). In the field of music education the main focus has been on teaching strategies and methods for instruction, and there is a general call for more research-based knowledge on how children acquire appropriate strategies and how they use them (McPherson, 2005).

This article presents and discusses empirical findings that contribute to the knowledge about how young students acquire *music literacy*. The findings are based on a Ph.D. study that examines emergent music literacy acquisition in a music school context (Blix, 2012). The research question for the project was: *How do young beginners on a music instrument acquire music literacy.* The primary focus was the *identification and description* of the *learning strategies* children use in order to become literate in music.

The aim of this article is to discuss the findings of the project with an emphasis on learning strategies and the pedagogical implications of the findings. After a presentation of the key concepts *music literacy* and *learning strategies* and the findings of the research project, the article will discuss issues concerning strategy use, awareness of strategy use, and the pedagogical implications that follow this strand of findings. Finally, I will briefly address the impact of multimodality and meaning-making processes on learning at a young age. In addition, avenues for further research are suggested.

Theoretical perspectives and key concepts

Blix (2012) defines music literacy as *the ability to identify, comprehend, reflect, interpret, create, and communicate music using printed and written musical material in different contexts* (ibid.: 48). Using the concept of *music literacy* (as opposed to concepts such as *music reading* or *sight reading*) signifies a view of music literacy acquisition as more than mere cognitive and music linguistic processes. Music literacy takes into account social and cultural factors that are integrated elements of the development of skills and knowledge related to music as a symbol system, and it is thus a holistic view of the factors that interrelate with the individual developmental processes.

Language researcher Richard Kern refers to literacy as *social practice* (Kern, 2000) and stresses the importance of the social and cultural aspects of literacy learning. This corresponds with research in music education that is moving towards a theoretical framework of cultural psychology (Barrett, 2011).

Recent research on learning processes (Alexander, 2005; Bandura, 1986; Barrett, 2005; Kern, 2000; Kress, 1997; Langer, 1986) discusses a possible synthesis of cognitive and socio-cultural theories. Ivar Bråten (2006) says:

> Without doubt, cognitive and social perspectives on literacy learning, taken together, give a richer and more holistic picture of the increased understanding and action competence that learning to read and write may be said to involve than can be highlighted by only one of these perspectives (Bråten 2006: 25, my translation).

The knowledge that each individual brings to the learning situation changes and is negotiated as they comprehend the culture, goals, and the written music's decoding aspects (the musical 'linguistics'). The students' strategies, their insights into their own learning processes, their interest in learning, and their knowledge about the given subject, play important parts in this holistic picture (Alexander, 2005; Barrett, 2005; Gromko, 1994; Waller, 2010). Based on these assumptions, it becomes necessary to understand *literacy* acquisition as a more complex process than just decoding a symbol system. Kress (1997) also points out that we cannot really study children's learning without looking at the multimodal ways they make sense of things:

> Unless we understand the principles of making meaning in *all* of the ways in which children do, we won't – so I argue – really understand the ways in which they try to make sense of print. In a time when the landscape of communication is changing so decisively, we cannot in any case continue to

> ignore their making of *signs* and *messages* in such a vast variety of modes, in two or in three dimensions, spatially or temporally constructed (Kress 1997: xix).

A socio-cognitive view of literacy sees both learning and knowledge acquisition as active meaning-making processes, with the latter also being viewed as constructed. Thus, the acquisition of music literacy involves the learner comprehending and learning the culture, ways of expressing meaning, how to use the cultural tools, and the ways music is written and decoded. Musical sound and written music as means of communication are therefore conceptual prerequisites for the methodological considerations throughout the project. In the empirical study to which this article refers (Blix, 2012), music literacy acquisition is situated in the specific social and cultural contexts of a music studio setting with one teacher and one student present. For the individual student the situation is, among other things, about *meaning making* regarding a specific type of written signs, through the acquisition of *knowledge,* getting *interested,* and gaining a useful set of *learning strategies* (Alexander & Fox 2004; Kern, 2000; McPherson, 1997).

Learning is here regarded as an active meaning-making process, and this involves the learners engaging in their own learning procedures. The concept of *learning strategies* is theoretically linked to music literacy acquisition as a meaning-making activity, and is in the context of music literacy acquisition defined as *mental or physical operations used to comprehend, acquire, memorize, decode, interpret, and use music notation in the context of learning to play an instrument* (Blix, 2012: 14).

Research method

The empirical material for the project *Emergent music literacy* derives from observations and interviews within an overarching case-study design. The choice of case design for the initial project was based on the desire to observe the phenomenon of *music literacy acquisition* in the context where it takes place, and when it happens (Kern, 2000). The *cases* comprise the individual students and the way they acquire music literacy.

The case design consists of participatory observations and qualitative interviews (Kvale, 1996). Four beginners (ages 8–9) were observed and interviewed during their first year of learning to play an instrument in a Norwegian music school.

Two flute students, two trombone students and their teachers agreed to participate in the study. Approximately eight lessons of each of the students were observed, and in addition, each of the students was interviewed twice during the year. The choice of four cases was due to an intention to study more than one type of instrumentalist (woodwind and brass), and the number of cases ensured that the project could continue even if one or two students should drop out during the period. The sample was based on criteria such as age, instrument, and that they had no previous knowledge of music reading. The two chosen teachers were asked to pick two students each that fulfilled these criteria. The teachers were selected by criteria related to instrument type, extensive experience with teaching and whether or not they had students that fitted the study.

Participatory observation as a data collection method gives the opportunity to gain inside information regarding the learning environment, the teaching methods, and an overview of the context of the observed learning strategies. The lessons were observed with an emphasis on dialogue, events, activities, and what the students were playing. The data contain transcribed dialogue and descriptions of behaviours of a non-verbal character (musical/sound, iconic, kinaesthetic). The students' meaning making is regarded as multimodal, because it not only appears through the spoken or written, but also through visual, kinaesthetic, and aural dimensions (Kress, 1997; Rostvall & West 2001). The project therefore also has an explicit focus on the aspects that lie in musical sound, gestures, glances (the students looking at the teachers' fingers' for instance), in addition to what is spoken and written.

	"Amund"	**"Christer"**	**"Bente"**	**"Dina"**
Week 39/08		Obs 1	Obs 1	Obs 1
Week 40/08	Obs 1		Obs 2	Obs 2
Week 41/08	Obs 2			
Week 42/08	Interview 1	Obs 2 + int		
Week 43/08			Interview 1	Interview 1
Week 46/08			Obs 3	
Week 47/08		Obs 3	Obs 4	Obs 3
Week 51/08				Obs 4
Week 3/09	Obs 3	Obs 4	Obs 5	Obs 5
Week 5/09	Obs 4	Obs 5	Obs 6	Obs 6
Week 19/09	Stopped taking lessons	Obs 6	Obs 7	Obs 7
Week 21/09		Obs 7	Obs 8	Obs 8
Week 21/09		Interview 2	Interview 2	Interview 2

Figure 1: Schematic overview of collected data. Each observed lesson lasted 25 minutes, and all were one-on-one lessons. The interviews lasted 20–40 minutes each.

The interviews function as a data collection method that gives the researcher the possibility to follow up observed behaviour, ask for explanations, and to get the informants' explicit view on their own strategies for learning (Dalen, 2004). The interviews focus on themes such as the students' musical background, what they learn and understand in the lessons, their interest in music literacy acquisition, their learning strategies, their explanations of why and *how* they plan to learn to become musically literate, and how they think when they are playing using written musical notes. They were asked to bring their instruments to the interview sessions in order to test how they sight-read, and as a tool for them to use when they answer the interview questions. Themes that emerged from the observations were also brought up in the interview sessions (Cohen et al., 2000).

During the interviews, three short music literacy tests were used to determine what the students knew about note symbols, if they could play using the written music, and if they knew how to write down a song they knew how to play on their instrument. The first task was a reading task, and they were asked to play a short piece of music. The second task was a test of reading comprehension, where the students were asked to fill in the *right* notes where the pauses were. This test is an equivalent to the language test called *cloze test*. A cloze test is an assessment that consists of a text where some words are removed, and the participant is asked to fill in the words that are missing, as a test of the participants reading comprehension. Additionally, the students were asked to write down a song they know by heart.

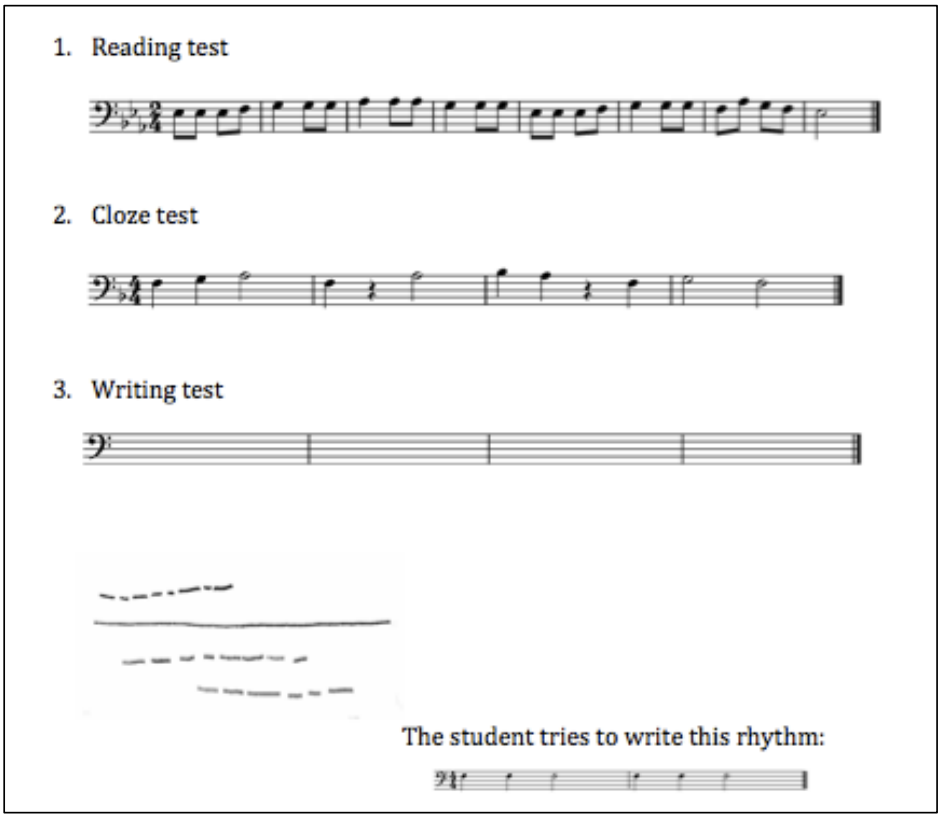

Figure 2: Test sheet from the interview with the trombone student 'Amund'.

All the lessons and interviews were filmed with two DVD cameras in order to revisit the material, and to be able to capture gestures, facial expressions, finger pointing, the musical notes at hand, and bodily movements. Standard ethical procedures for research involving children were used (Cohen, et al. 2000).

The observations and interviews were transcribed in detail, also commenting on the participants' physical actions and musical behaviours (Nielsen, 1997; Rostvall & West, 2001). The level of detail in the transcriptions follows the research question's focus on music literacy acquisition and learning strategies, and episodes that are related to more technical issues such as instrument maintenance, are more sketchily described. The events that can be characterized as *literacy events* are transcribed in richer detail. In order to identify and describe the students' learning- and reading strategies in what was considered an extensive amount of transcribed material the

data program NVivo was used. This program is designed for coding qualitative data and was used to perform *content analyses* of episodes, events, comments, actions, and dialogue from the material in order to identify and categorize strategies and literacy events (Barton, 2007; Bazeley, 2007; Oxford, 1990; Strømsø, 2001).

The units of analysis in the case study are the individual students' learning strategies. The observations and interviews are analyzed in categories that emerged through a process where theoretical perspectives and empirical material interacted (Kvale, 1996). The main categories of strategies originate from research into second-language acquisition (Oxford, 1990; Strømsø, 2001), but are adapted to the specific context of the study, the subject, and the actual observations. In this regard, the empirical material guides the choice of which strategies are interesting (possible) to consider in this context, and additionally other types of strategies arose that are more specifically related to music learning, the types of tasks given, and to the age and maturity of the students. The learning strategies used and described by the students in the four cases emerge from the interviews and observations in the form of statements like: 'I usually look through the notes before I play,' or as observations of the students when they are guessing what notes to play, or asking the teacher to help decode the written music.

Each case also provides different data that contribute to the aim of *identifying* and *describing* learning strategies, and to describe how this interrelated with social and cultural elements in context.

Findings

The project, to which this article refers, focuses primarily on the strategies that the students use in order to understand and use musical notes. This also includes strategies suggested by the teachers. The strategies recommended by the teachers are to a considerable degree cognitive and memory-related strategies, but the students' use of these strategies varies from case to case.

The development of a taxonomy of strategies has been a process where theoretical models from music and language strategy research are considered in a close interplay with data from the cases. Due to the age of the informants, and the tasks at hand, a taxonomy of principally cognitive strategies proved too limited. Categories from second-language learning studies that took into account a wider range of strategies were selected as a more productive taxonomy. In addition, strategies concerning listening and support were considered necessary in order to describe what actually

took place in the observed learning processes. As a result of this abductive (Alvesson & Sköldberg 2008: 55) process, the strategies identified in the material are:

Social strategies: Asking for help, asking questions, pretending to understand, taking initiative, admitting lack of knowledge, cooperating with others.

Cognitive strategies: Analysing, taking notes, detecting errors and correcting them, associating and comparing, looking through the music before they play, looking for information in the book, practising/repeating, singing the music before playing.

Memory-related strategies: Remembering fingerings/positions, remembering the music symbols, remembering musical sound.

Support strategies: Guessing, looking at the teacher's hands, imitating sound instead of reading, reading secondary notations.

Listening-related strategies: Listening to what the teacher plays/sings, hearing the written music inside your head, imitating sound, improvising.

The main categories are not mutually exclusive. The strategy of looking at the teacher's hands is, for instance, a preferred strategy during the first lessons when the students are supposed to learn fingerings/positions and note names, but when the aim later on is to read music, the same strategy is interpreted as a *support strategy* and a compensation for the lack of decoding knowledge.

The findings show some characteristic features that seem to be significant for the music literacy learning processes for young beginners. The preferred *types* of strategies that are used in the individual cases are quite consistent throughout the year, but the *ways they were used* changed. The student that used few social strategies in the beginning of the year is also the one that used few social strategies at the end of the year, and the student that uses mostly cognitive strategies in the beginning continued this strategic behaviour throughout the year. The quality and knowledge of the strategies, on the other hand, changes. The students' guessing strategies become more qualified, and error detection and correction become less unintentional and more self-directed.

The following example is a dialogue from the first interview with 'Amund'. He had only had three trombone lessons prior to this interview. The student has just invented a melody based on one pitch and a samba-like rhythm.

Example 1: From the interview with the informant 'Amund', eight years old:

Hilde (the researcher): *Do you think it is possible to write down what you just played?*
Amund: *Yes, but I don't know how you do it.*
H: *No, how do we do that? You played some different long and short notes. How do you write long and short notes?*
A: *I think one puts a long line and a short line… Yes, then it goes: donn, donn, donn, then there is many short ones. Yes, and then there is, for instance a long line* (Plays a long F on the trombone)
H: *Ok. How do you write it then?* (I give him a pencil) *Can you write it on this piece of paper?*
A: (Writes a long line (horizontal))
H: *Ok, and what about the short ones?*
A: (Write short lines)
H: *So if you are going to write for instance* (I sing the rhythm of 'Jingle Bells'), *what will that look like?*
A: (First, he writes the second last line on the test sheet (See figure 2), then he corrects himself and writes the last one, which made a correct representation of the short and long notes in the song)
H: *Very good. Now, can you tell me how to play these notes?* (The researcher points at the second melody in the test sheet. The student plays five equally long notes) *But there is a difference: Here there is a note that has no colour inside and the one that is black inside* (I point at a half note, and then a quarter note). *What is the difference between the two?*
A: *That one is two or four beats* (points at the half note), *and that one is one beat, and one beat is like this:* (He points at the quarter note, and then stamps at the floor with his foot).
H: *Ok. Is that one short or long then?* (The researcher points at the half note).
A: *Yes, that one is longer than that one* (means that the half note is longer than the quarter note)
H: *Exactly, the half note is longer than the quarter note.* (This is called a "fourth note" in Norwegian, and this confuses the student)
A: *No, no, the fourth note is longer than the half note, because the fourth note is four beats, and the half note is two beats.*

The example shows that the student knows too little about written music to be able to use it as a means to play songs. He realizes that the symbols represent what pitches to play and how long they are supposed to be, but he is not capable of using this knowledge to play the music, even if he has been told how to in his trombone lessons.

He is trying to construct some sort of meaning from the symbols, but when asked how one can notate a rhythm, he shows that he has not yet understood that the conventional note symbols represent sounding music. His understanding of the symbol-and-sound connection is not yet established (Adams, 2000).

In this case, the strategies the young student uses to solve the task are characterized by *guessing* based on some knowledge of trombone playing and musical symbols, and he is trying to use the spoken information he has been given by the researcher to negotiate the 'right' answers. It is a common misunderstanding among the informants that something called an eighth-note must be longer than a fourth-note. This is also in keeping with their age and knowledge of mathematics. However, when they see the notes without referring to the names, they often decode them correctly.

The example also illustrates what was classified as the strategy of *associating and comparing* when 'Amund' describes the difference between half notes and quarter notes. He *recalls* the musical symbol of a quarter note, and the sound/length of it, which he demonstrates by stamping his foot once. This student generally uses relatively few cognitive strategies, and his shortage of analytical approaches to the written notes probably prevents him from really learning to read music during the period of the project.

The way the students *use* the strategies varies to a significant degree, and, importantly, the data from the project show that the development of *new strategies* for music literacy acquisition is not as prominent as expected. Similar results can be seen in research into language literacy (Alexander et al., 1997; Strømsø, 2001: 276).

The students in the study use support strategies to a large extent during the first months of their lessons. For some, the use of these strategies decreases relatively early, while others use these types of 'emergency strategies' a long time after they are expected to know how to read the music. 'Amund' (see example 1) does not become a good music reader during the observed period, and he guesses more and more, which indicates that he gradually learns more about what the possible answers to the teacher's questions about note names and positions on the trombone may be.

'Bente', a more skilful reader, almost never guesses, but instead becomes quiet while waiting for the teacher to tell her the answer or explain what to play. She shows in the interviews that she has thought through what strategies she uses to acquire literacy in music, something that can also be seen in the observations through her use of relatively few support strategies, and more cognitive and memory-related strategies than the other informants. She explains for instance how she can find information in the book if she doesn't remember the name and fingering of a note. She also describes how she sings through the songs using note names while performing the fingering on her flute in order to avoid stopping or playing the wrong notes when she starts to play.

Some of the strategies the students use are related to the instrument itself. The flute students detect and correct errors more often than the trombone students do, and it seems to be related to the fact that it is easier to understand the connection between the note symbol, the fingering, and the musical sound on a flute than on a trombone. On the trombone, the logical connections seems harder for the students to grasp, and in addition, producing correct notes is more difficult on a trombone than on a flute.

One of the central findings of the project is that the students need more than just verbal instructions from their teachers on good strategies for learning. The young students learn better when they are aware of the strategy, and are asked to rehearse it several times. The flute students are instructed by the teacher to sing through the music by note names before they play, and they do this together with her in the lessons. This constitutes a strategy that they have internalized and also use when they are asked to read music in the interviews. This implies that an awareness of how the students learn is not sufficient; we also need to know more about how to teach preferred strategy use.

Discussion and implications

Research shows that good learners take specific and more systematic actions than poor learners, and have a higher number of possible strategies available in order to perform a task. In addition good learners identify the goal of the task and are capable of adapting the most appropriate strategy in order to achieve that goal (Griffiths, 2004; Nielsen, 1998; Oxford, 1990).

Results from several studies, especially in second-language reading and writing (Oxford, 1990; Griffiths, 2004), show that the *types* of learning strategies that are used are vital for learning and knowledge development. For instance, cognitive strategies such as analysing text or looking up unfamiliar words are efficient strategies in order to become an independent reader. Compared to McPherson's (1997) studies of young music students' learning processes, the material in the presented project shows relatively few cognitive strategies such as the use of contour information, identification of key and time signature, and looking through the music before playing. This might be explained by the age of the students and their readiness for the music literacy tasks. Cognitive and memory-related strategies seem to be the most effective for learning to read music. The data from the project shows that the students instead use a great deal of support strategies that are mostly inefficient, and often escapes the teachers'

attention. This calls for attentive teaching methods in order for these strategies to be detected and changed.

In several studies it is reported that students tend to display relatively few changes in the type of strategies they use; even if they are not very effective, a student will often continue using the same strategies (Strømsø, 2001). Strategies suggested by the teachers are more likely to be internalized by the students if the teacher uses them frequently in the lessons. An important pedagogical consequence is that the desirable strategies must be made clear to the student, and then rehearsed (McPherson, 1997, 2005), together with an explicit comprehension of the task (Blix, 2012: 252).

In recent studies on music rehearsing strategies (Hallam, 1997; Jørgensen, 2004; Nielsen, 1998; Renwick, 2008), and general learning strategies in music learning (McPherson, 2005), the importance of the learners' *awareness* of strategy use is stressed. This helps the learners to choose from different strategies and enables them to consciously transfer the strategies to new contexts. Knowledge and awareness of students' ways of strategic learning is useful and necessary for the teachers who are expected to educate them in the very complex matter of playing an instrument and acquiring music literacy. Knowledge about learning strategies will make it possible for the teacher to pay attention to meaning-making processes and how music literacy acquisition develops for young musicians. Children's own descriptions of their strategies and understandings can provide important insights and didactic knowledge for the field of music education.

Understanding the task at hand is one of the factors that have impact on learning processes, and in the *Emergent music literacy* project one can see that the children's confusion regarding the task leads to a slower progress for some of them. *Task comprehension* is a multi-dimensional process because it is negotiated in relation to factors such as interest, knowledge, strategies, and available tools. Students may on many occasions use counterproductive strategies because they do not understand, or are not told, what the specific tasks are. One recurring example in the empirical findings is that the students in the beginning are told that they should look at the teacher's fingers to learn how to play, but when the task later on is reading music, the strategy of looking at the fingers is no longer appropriate. The student that understands the tasks the best is also the best reader at the end of the school year.

Knowledge of the subject at hand is an important factor for choice and use of strategies (Alexander, 2005). A student develops a better sense of what strategies are appropriate for the different tasks as a result of increased knowledge regarding music performance, the music notation system, the connection between the written music and the musical sounds, and the learning context itself.

The transition from not knowing what the tasks really comprise, what the aim of the lesson is, and what role the symbol system has, to remembering fingerings and note names, and comprehending the context and the demands, is interesting in several ways. First of all, students handle new settings in different ways, and this means that it is crucial for the acquisition processes that the student and the teacher establish a joint understanding of the learning situation. Second, the role of the written music can be vague for the student in the beginning, and the presented project shows how the students are socialized into different comprehensions of this. For instance, if the teachers always use musical notes in the lessons, the students tend to establish the misconception that it is not possible to learn to play an instrument without written notes.

The symbol-sound connection is a challenge for young music literacy learners, and misunderstandings in this regard affect how they choose to appropriate learning and reading strategies. This supports a stronger focus on teaching methods in music literacy teaching that takes into account strategies such as writing, composing, having fun with invented notation (Gromko, 1994), and singing the written music in order to achieve a holistic understanding of the purpose of notated music. There is also a need for differentiated learning strategies adapted to the technical and physical features of different instruments.

Children seem to be able to accept several phases of what can be interpreted as *temporary understandings*. Vygotsky (1978) and Bruner (1996) both refer to this as 'fumbling' attempts to create meaning. In the project under discussion here this is demonstrated through the students' willingness to leave behind previous knowledge and accept new explanations on the spot, even though this contradicts earlier understandings. This often takes the form of *negotiations*, either in the individual student's own mind, or with the teacher. A student's acceptance of *temporary understandings* is fascinating, as these can also function both as resources for the children in order to maintain the flow of the lessons, and as learning stages that help clear up misunderstandings along the way. Often students misunderstand without the teachers knowing, also because they tend to not ask questions or ask for help.

Young students use a multimodal approach in their meaning-making attempts and strategy use. The learning processes are actively connected to multiple media at the same time: musical notes, pictures, drawings, counting unities, sound, and instructions for actions (to mention only some). In addition they use the teacher's verbal instructions in combination with the sound and physics of their instruments, bodily movements, knowledge from other media (computer games for instance) and pictures in a book to make sense of the learning situation and musical notation. The ways in which the children express themselves in the project discussed here also reveal this multitude of modalities.

Through paying close attention to the wording, imagery, metaphors, strategies, and gestures that beginners use, teachers are given clues about *the different ways* their students make sense of the symbols and rules of music (Blix, 2012; Tan, 2002: 139). This stresses the importance of observing young students' ways of expressing themselves, to see how they understand and misunderstand what happens during the flow of a music lesson, and the implications of each individual person's learning styles and strategy use. An observing and dialogic teaching approach will provide an instrumental teacher with useful tools for the individual adaption of strategies for learning (Bruner, 1996).

Future research

Building on some selected findings in the emergent music literacy project, this concluding section aims to suggest some future research. The project demonstrates some of the ways young learners display meaning-making as creative and dynamic activities. The multimodality that lies in the use of gestures, sound, eye contact, pictures on the wall, metaphors, movement, and stories created in order to make sense of the written musical language, is in itself an interesting subject for further research. The different strategies children use are informative, and their imaginative ways of experiencing with and within music seem to be a vital part of an emerging music literacy, and this motivates future studies that look into the creative and multimodal ways children learn in general.

It is important to notice that children gradually undertake learning strategies and ways of expressing meaning according to the cultural context. Learning to use these strategies in suitable and meaningful ways can only happen over time (Bruner, 1996). Temporary understandings and strategies are useful, and probably necessary, tools on the path towards music literacy, and a conscious and knowledge-based understanding of each individual's transitory learning can provide useful information for the teacher regarding strategies for teaching. There is a need for further research on what *teaching strategies* teachers may use in order to take into account the multimodal ways in which children learn. In general, more studies are required on children's ways of learning music literacy with an explicit focus on the children's perspectives. More knowledge about the reading strategies of proficient music literates and the implications this has for practice will also prove helpful in this regard.

Learning strategies constitute an explicit priority in the Norwegian curriculum for primary and secondary school (*The Knowledge Promotion 2006*). The reason for this is

an epistemological understanding of learning as a process that calls for the student's engagement and knowledge of his or her own learning processes. Learning strategies is a topic that is not prominent in music education research yet, and there is a need for a more explicit attention to be paid to learning strategies in relation to music literacy teaching. The teachers' knowledge of *how* their students learn to comprehend and use the musical symbol system affects the students' learning processes in several ways, and this knowledge must also be grounded in practice-based research.

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