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Planning for multi-modal listening and digital meaning making: Music streaming literacy as a didactic activity

ABSTRACT

While “access models” represented by subscription services such as Spotify make vast libraries of music practically accessible to teachers, digital streaming programs also introduce new complexities to classroom settings. Therefore, the concept of digitalization in relation to listening requires the attention of researchers in education and didactics. This article examines the ways in which Swedish teachers use Spotify, including how usage influences teachers’ didactic choices and approaches to planning for music teaching and learning. Research participants included eight music educators with experiences in streaming music services in music classrooms. Findings show that digital literacy and the listening, teaching, and learning of music are inextricably intertwined; and that placing the application of music streaming in the context of a music classroom creates complications in practice. Implications highlight the importance of identifying and discussing complex issues occurring as a result of the use of streaming services in music classroom, gaining music streaming didactic literacy which is both a didactic competency that teachers use in planning for teaching, as well as a content for students to learn.

Keywords

Streaming, multi-modal listening, phenomenological didactic, planning, digital literacy, Spotify

INTRODUCTION

Swedish teachers are currently making extensive use of music streaming through subscription services such as Spotify. As vast libraries of digital media are made available through an “access model” and subscription services replace the need for ownership of audio materials, digitalization in relation to listening ushers in new complexities requiring the attention of researchers in education and didactics (Pio, 2017).

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As a foundation for the present study, Ferm Almqvist et al. (2020) conducted a larger border crossing research project, financed by Wallenbergstiftelsen, to explore meanings and functions of streaming media for the purpose of facilitating *Bildung*, or development through reflective dialogue. Such an investigation requires experience in teaching, thinking, and learning with Spotify as a starting point (Ferm Almqvist, 2020a). Johansson et al. (2018) and Ferm Almqvist et al. (2021) observed that Spotify is used for musical meaning making and learning outside of educational institutions, while Ferm Almqvist (2020b) emphasizes music experience and digital literacy as essential for using streaming media in ways that broaden holistic musical knowledge.

The exploration of how music streaming services are used and approached within formal music educational settings is a relatively new field of research. As analysis of the functionality and effects of music streaming services becomes a developing area within the field of music education and technology (Leijonhufvud, 2018), pioneering inquiries include how streaming applications can be used for digital collaborative arts learning and distance teaching (Leijen, 2009; Cook & Crawford, 2013; Drioli et al., 2013; Ruthman, 2007; Walls, 2008) and how streaming services (such as YouTube and to some extent Spotify) are used for finding, experiencing and sharing music as a part of formal music education (Cayari, 2018; Cremata, 2017; Dougan, 2014; Wise et al., 2011; Webb, 2007). Relatively unexplored areas of research appear to include the competencies required of teachers for effective use of subscription music streaming services, as well as the ways in which streaming services are used by teachers to organize musical materials. Therefore, the present study draws upon investigations focusing on listening as a central music educational activity (Ferm Thorgersen, 2013), learning through with music streaming outside the classroom (Waldron, 2013; Whitaker et al., 2014; Kruse & Weblen, 2012), and critical views of consumption of music streaming services (Aquiar, 2017; Morris & Powers, 2015; Ngyen et al., 2014) to provide a basis for further inquiry. Although music listening preferences (Gregory, 1994; LeBlanc et al., 1996), aural skills (Simms, 2005; Madsen & Geringer, 2000), and informal modes of music learning through the copying of sound sources (Swanwick, 2003; Green, 2006) are well investigated, listening as a basis for musical learning (Swanwick, 2003; Green, 2006) has not been investigated in depth recently, and is specifically absent in the Nordic field of music education (Georgii-Hemming & Westvall, 2010).

Based on a review of literature, it would appear that research is needed to investigate how music streaming services are used and internalized by teachers working in the context of compulsory music education programs in Sweden. Therefore, this study aims to describe and critically analyze how streaming services – such as Spotify – are managed in the preparation for teaching and learning music in compulsory music education programs in Sweden, and what the consequences of such planning activities may be. To fulfill the aim of the study, the following research questions guide the research: 1) How do music teachers use Spotify to plan for music teaching and learning? 2) How does the usage of music streaming services influence teachers' didactic choices and

planning for the teaching and learning of music? And 3) What competencies are required of teachers to be able to use streaming services in conscious ways?

The present study investigates how teachers and students interact with music through streaming services, as exemplified by Spotify. Because the students are to learn something specific in the music classroom, the digitally influenced situations realized through Spotify are linked to intention. Teachers and students are to communicate and make meaning in relation to technology by interfacing with streaming services through a digitally mediated platform such as Spotify, as presented in the classroom by the teacher. This arrangement places responsibility on the teacher, requiring competencies, strategies, and digital literacy, at the same time as such knowledge is to be developed among the students (Drotner, 2007). Additionally, an ability to critically relate to the abundance of accessible music would be crucial to develop (Leijonhufvud, 2018). Other critical aspects include the functions and meanings attributed to the streaming service through teaching activities, as technological, legal, and economical factors may permeate teachers' didactic choices, which in turn influence curricula and syllabi. Therefore, the traditional didactic triangle of the curriculum, the teacher, and the student is altered. The tip of the triangle, where the content is represented, becomes partly "covered" by the streaming service.

Access to content demands "going through" the service, while the service, *per se*, becomes the teaching content. Thus, a theoretical framework is needed to explore the convergence of conditions and variables influencing planning for the teaching and learning of music, as the streaming service, Spotify, and musical content are negotiated by the teacher and students. As a starting point for investigation, a phenomenological tenet holds that listening engages the whole body through several senses. In order to develop understanding of teachers' processes in planning for music teaching and learning, a didactic approach is needed. For the purposes of the present study, a phenomenological didactic approach offers a means of learning about how to teach using music streaming services through the lived experiences of teachers. Finally, I explore the concept of digital literacy as needed to plan for the teaching and learning of music using Spotify in the music classroom.

Phenomenological Didactics

The current investigation aims to describe and critically reflect upon how a streaming service is managed in planning for the teaching and learning of music. Therefore, teachers' didactic actions are the central focus of investigation. Such actions reflect interconnected decision-making processes, all of which can be approached on the basis of several ontological and epistemological grounds. In this case, a holistic, phenomenological lens draws subjects of the world, human beings, music, and learning into focus through phenomenological didactics (Kroksmark, 1987; Meyer-Drawe, 1986; Ferm Almqvist, 2017). Phenomenological philosophy allows for the development of knowledge and understanding about the world through the experiences of human

beings. In addition, the world is seen as inter-subjective (Merleau-Ponty, 1962; Bengtsson, 1998). It is through this principle that human beings are viewed as intertwined with the world, and with each other. Hence, sharing experience occupies a central focus in the theory of phenomenological didactics (Kroksmark, 1987; Meyer-Drawe, 1986; Ferm Almqvist, 2017).

According to phenomenological didactics, the task of the teacher is to open and gain access to lived worlds. In other words, teachers prepare situations in which students can share and encounter new experiences. Phenomenological didactics require that teachers evoke mutual curiosity and respect, in addition to ensuring that different experiences are shared, valued, and discussed, in turn contributing to reflective learning and the challenging of traditions (Ferm Almqvist, 2017; Kroksmark, 2007). Through the sharing of experiences that concern specific themes constituting the content of education, new understandings and common knowledge are created (Kroksmark, 1989; Meyer-Drawe, 1986). With the implication that teaching and learning situations involve curiosity and respect for the experiences of a multitude of human beings, such an approach can offer a variety of perspectives, values, and ways of making music and relating to a streaming service and the musical content it mediates (cf. Meyer-Drawe, 1986). Earlier, “inner,” experiences of music, as well as of streaming services, are recreated and developed towards “outer” common knowledge. In the current case, experiences of music, as well of the streaming service per se, can become material for meaning making, which are central considerations when preparing for the teaching and learning of music.

Digital Literacy

Digital literacy is a concept that has continually evolved in relation to technological development. The more complex the digital techniques that people encounter in their daily lives become, the greater the demand for the development of digital literacy (Bawden, 2006). Accordingly, literacy and technology continually shape one another, requiring awareness and management measures among both music teachers and students. As a central starting point for digital literacy, digital media cannot be regarded as a neutral means of delivering content and should not be used in merely functional or instrumental ways (Buckingham, 2006). Instead, the ability to evaluate online content involves not only reflections on the nature and origins of information, contextual knowledge, and the use of multiple sources, but also requires functional and critical digital skills and knowledge about the internet and the digital environment (Polizi, 2020). Buckingham (2006) underscored the need for teachers to actively encourage students to develop critical approaches to digital media. Such critical approaches are also needed outside of school, not least in relation to the commercial interests of the creators of digital media software.

Therefore, digital literacy contains something more than technical skills or narrowly focused competencies. Instead, Buckingham (2006) suggested a humanistic

approach to the concept of digital literacy. Beyond learning how to locate and select material, use browsers, hyperlinks and search engines, students also need to be able to evaluate and use digital information critically (Breakstone et al., 2018). Therefore, students need to be prompted to trace the origins of information, as well as to distinguish the factors shaping the motives of these sources. Accordingly, the task of the teacher includes taking the responsibility to broader social, political and economic forces. In other words, digital literacy involves the ability to reflect upon how values of the world are mediated, and in what ways, in turn demanding analytical skills and a meta language (cf. Burbules & Callister, 2000, pp. 85–90). Since digital literacy is positioned in contexts that are fluid and continually changing, in relation to streaming services, this concept becomes even more complex than web-literacy and game literacy. Yet, digital literacy in relation to streaming services has not been addressed within the field of music education to any great extent (McPhail & McNeill, 2019). Nevertheless, a concept is needed to capture digital literacy in a music streaming context as a field for scholarship, as the consumption of digital media is something more than multi-modal listening (cf. Banovati et al. 2019; Hennig 2017).

Digital Literacy in a Music Streaming Context

Ekberg (2020) has situated the concept of digital literacy in a music streaming context in relation to a fluid, changing, society and world, formulating five aspects of literacy practices that seem applicable to the current study. The first of these aspects is the ability to let oneself be (mis)led by and through the service. By this Ekberg means to practice an approach in which the user consciously submits to the service's algorithmic steering, operating on the basis of the company's data records and user models. Thus, this first aspect is to let oneself be steered, which influences what and who the user can be or become. Depending on who the user wants to be and become as a listener in relation to the service, interactions with the algorithms behind the service can be viewed in different ways.

In addition, Ekberg (2020) defined the ability to focus, to create time and space for listening in the digital and erratic current situation, even while influenced by a multitude of musical offerings. He further underlines that is challenging to be “here and now,” which is stated as a precondition for discovery of new dimensions and references. Another aspect of literacy practice Ekberg proposed, is a border-crossing ability, entailing thinking, viewing, and acting outside the offerings of the digital service. Among other things, this aspect concerns the willingness to “cross borders” to use other apps and analogue mediators, as well as to relate to suggestions concerning unknown artists, albums, genres or styles. Such an approach expands and broadens the musical material offered by the service.

Additionally, Ekberg accentuated the ability to create space for artistic or aesthetic experiences in relation to the digital service, beyond merely getting a broad overview of how the current musical landscape is shaped. In this sense, the user develops

an ability to “give and take” in relation to the streaming service, which includes the challenging task of “teaching” the service to be sensitive and adaptable, not least as the service is also steered by agreements with record labels regarding marketing (Burkart, 2020). In addition, the user develops the ability to handle preferences regarding sound quality and the placement of sound equipment and amplifiers in using the application. In sum, Ekberg’s fourth aspect concerns approaches to handling technical aspects that influence the aesthetic experience.

Finally, Ekberg illuminated the practice of subversive contra-reading, which concerns a critical interpretative reading, influenced by misbelief. This includes asking oneself questions such as, What does such a digital platform accomplish, whereby a human being is interrelated with music through machine? How does a digital platform influence the user’s relation to the music? This aspect was seen by Ekberg as an ability accentuating self-awareness and critical ideological perspectives. Ekberg further emphasized the fact that, in relation to the technical services rendered by the music streaming provider, a human being is primarily a means and not a goal or an end. Such a critical vantage point could prompt a user to abandon such a platform altogether, in favor of another app or another medium for access to music. When placing the concept of digital literacy in relation to music streaming in an educational context, the task for schools and teachers becomes clear: To encourage a critical approach, as subversive contra-reading among students, without taking away potential for digital musical meaning making through listening.

METHOD

A remaining question concerns what responsibility teachers have to educate students with skills, knowledge and attitudes toward digital tools within the frame of compulsory music education. All components involved are fluid, therefore the required competencies are also changing, including the critical eye required of the consumer in relating to a service like Spotify so as to protect oneself from being commercialized. With this in mind, it is worth asking what demands such fluid conditions place on the teaching situation, as well as what risks there are in managing the interface. In the case of this article, digital competence is intertwined with musical knowledge and didactic awareness in situations where music is to be learned and reflected upon (Jansen et al., 2013). How do teachers use streaming services to organize musical materials in such a way that students have equitable prospects of learning to create meaningful listening experiences for themselves? It may be that such equal situations do not yet exist, making the role of compulsory education all the more important.

As a starting point for the current investigation, all listening engages several senses in interplay. In didactic activities, as well as in interaction with a streaming service such as Spotify, an approach accounting for multiple senses becomes even more important, since visual and tactile cues can be included in the interaction. The teacher plans music teaching in relation to the service Spotify, aiming to offer students

opportunities to learn by playing, dancing, composing, and reflecting upon music through listening. The teacher may also organize teaching so that learning how to listen, learn and think in interaction with Spotify constitutes goals for school music education.

In order to address the aims of the article, it was crucial to gain access to qualitative descriptions of music teachers' lived experiences of Spotify use in the teaching and learning of music. As a methodology, internet-related ethnography is conducive to the purpose of the study, offering an approach that engages with internet practices and content directly, but not exclusively (Postell & Pink, 2012). Spotify usage, as well as the nature of social media, can involve the interrelationships of different web platforms that are constantly in progress and change, thus implicating physical as well as digital localities. Therefore, the purposes of the present study require accounting for the environments in which music services are streamed through identification of face-to-face social and material contexts. Therefore, it seemed reasonable to conduct interviews at the same time as the interviewees logged in to their Spotify accounts and managed to setup interface with the streaming service at my computer. To gain access to the participants' musical and digital backgrounds and patterns of interaction with the platform, I designed the interview protocol to guide me through the research participants' musical-digital landscapes of playlists and recent listening activity, connection to other applications, social media activity, as well as usage in the participants' daily lives.

Participants

Recruitment of participants was conducted through strategic and convenience sampling (Flick 2014). Since my aim was to gain access to a variety of experiences and perspectives in relation to the use of Spotify in the music classroom, participant selection focused on the recruitment of both teachers and learners of various ages. One university level methods teacher and one student teacher, as well as two teachers and one student teacher who were already involved in another of my projects and also agreed to participate. Finally, I asked a teacher at a lower secondary music program for the contact details of another student. The chosen convenience sampling strategy resulted in six females and two males, aged between 15 and 61 years old, with relatively well represented gender balance within each category of participants. The adult participants also held relevant employment, as shown in Table 1.

Principles of ethics were taken into consideration according to guidelines from Vetenskapsrådet (2017) for research involving humans. All participants in the study were informed according to the regulations of informed consent. The participants also received information about how to withdraw from the project and how to withdraw specific parts from the produced material. After being informed of the details of the study, all participants were asked to indicate consent by providing signatures, which were recorded before the interviews began.

Table 1*Participant Information*

Participant	Other occupation	Education	Teaching experience	Gender, Age
Music teacher educator 1	Music teacher in primary school	Music teacher education	36 years	F, 60
Music teacher educator 2	Music teacher in lower secondary school	Music teacher education	21 years	F, 45
Music teacher 1, lower secondary	Instrumental teacher	Music teacher education		M, 46
Music teacher 2, upper secondary	Dance teacher	Dance teacher education		F, 38
Music student teacher 1	Choir leader, instrumental teacher	Second year student	5 years	F, 37
Music student teacher 2	Instrumental teacher	PhD-student	10 years	F, 28
Lower secondary student 1		Music specialist program		M, 15
Lower secondary student 2		Music specialist program		F, 15

Interviews

Interviews lasted for approximately one hour each and were conducted in various locations based on participant preference, including my university office (3), in my home (2), at the participants' schools (2), and in a participant's home (1). The interviews were semi-structured in nature, and were influenced and stimulated by the use of Spotify in live time during the interviews (Kvale & Brinkman, 2009). The interviewees, as well as I, could alternately depart from, and continuously relate to, various events and activities fixated in the Spotify graphic user interface. This facilitated the orientation of the data sampling session towards the users' experiences and memories of specific situations and events related to the classroom, as points of departures for the interview conversation. The interviews were, in other words, stimulated by the participants' own Spotify interfaces, accessed at my computer, and documented by the virtual communication tool Zoom. The questions covered the areas of musical background, habits and

technique in relation to Spotify, as well as how Spotify was used by the participants in the teaching and learning of music.

Analysis

The recorded interviews were then transcribed verbatim and analyzed in a hermeneutic phenomenological manner (Kvale & Brinkman, 2009; van Manen, 1990). As the phenomenon of teacher planning as didactic action was the central focus of the study, data analysis occurred in four phases. The first phase of data analysis involved an initial reading of the transcribed material, opening the opportunity to identify different aspects in the participants' experiences of using and relating to Spotify in teaching and learning activities. From this reading, I extracted excerpts that related to aspects of phenomenological didactics in different ways.

In the second phase, I considered the didactic aspects represented within these excerpts more broadly through an analytical process of wandering between the messages of the excerpts as a whole and as contained within essential parts. To describe different sides of the phenomenon under investigation, planning as didactic action, three themes emerged as related to how the participants viewed, valued, and handled usage of the digital service in different phases of teaching activities.

In the third phase of analysis, the themes were treated in a narrative manner, whereby a text was distilled to an abbreviated form, based on the overall messages of the excerpts, for the purpose of communicating the results in a sensitive, situated way (de Beauvoir, 1948). The purpose guiding my selection of excerpts from the transcripts was to offer the reader an opportunity to understand the participants' experiences from "within" (Ferm Almqvist, 2019).

The fourth phase of analysis involved my alignment of the narrative texts with theoretical concepts through critical reflection. I approached the processes of analysis and interpretation of data with the sense that a phenomenological text is never to be read merely for its surface message, but rather the goal is for the reader to be invited to think about and relate the results to their own experiences and practices (van Manen, 2002).

Results: Collect and Organize Music in Relation to Specific Teaching and Learning Contexts

Yes, I think I use Spotify more in my music teaching life than for private reasons.

Analysis of this excerpt, expressed by an experienced music teacher, shows how Spotify has constituted a revolution for the more experienced teachers, transcending their own personal music enjoyment. Yet, the younger teachers and students seem to take the presence of Spotify in the music classroom for granted. The participants valued the streaming service as a pedagogical tool, with most participants placing their own private usage in the background, even if they rely on their own private accounts in the music classroom. One of the teachers, however, never used Spotify in the classroom, so as to

avoid mixing private and professional use. Among the more experienced teachers, access to the comprehensive musical material that the service provides, seems to ease earlier habits, while opening new ways of teaching based on accessibility here and now. For some, such as this teacher below, Spotify became an educational music archive without limitations in time and space:

Yes, there was a time where I brought a big suitcase with CDs which I hump around with [me] between schools, totally crazy. And I burned CDs you know. Today's technique, when it works, it is totally fantastic. And all possibilities to share with colleagues and students. I manage with my cellphone and Dropbox in my job.

The preconditions for teaching music have changed, since teachers no longer must rely upon bags of CDs, a process of ordering music through the mail weeks beforehand or asking students to bring music in advance. Hence, the alteration of relations between teachers, students, technology, and musical content in turn influences what is possible to learn in what ways, and what competencies are needed for further development. The teaching of music using a streaming service has also altered perceptual features of time and space in relationship to musical experience. Music from any time is made practically available through the Spotify service. Furthermore, students can access music at home, leaning whenever they choose. As Spotify can be made available in any place, musical experience is not exclusively embedded in a particular spatial context. As a result, power and responsibility are redistributed. As Spotify "personalizes" listening experiences while influencing the music that is offered, versions of songs and variations of sound qualities are customized to the listener, depending on the algorithms associated with the individual connected to the streaming service.

Thus, teachers, students, and the Spotify service are involved in the negotiation of musical experience. As one teacher expressed, "I have simply made it my working tool. A channel to colleagues and students." Educational contexts are changing as well. For example, as all kinds of music are becoming available digitally, the materiality of music teaching has changed. Therefore, the actions of teaching and learning are transformed. Smooth accessibility to music in teaching situations has not only changed teachers' actions, but also their planning, performing, and documentation of teaching. Approaches to Spotify and patterns of digital usage among the teacher-participants vary, depending on age. Each of the participants in the study had accrued extensive experience in music, facilitating their active engagement with Spotify in the music classroom. Yet, when a commercial, algorithm-based service is invited into the classroom, several new issues emerge, requiring reflection and management. My analysis of data suggests that teacher-participants have made Spotify their educational tool, thereby the teachers occupy a stance of openness and willingness to include Spotify and streaming related applications and services as an active part of teaching activities.

In regard to planning for music teaching, teacher-participants use Spotify to find music through both open-ended and directed searches, for the purpose of organizing music in relation to specific classes, themes, grades, and situations. The intentions of

the teacher-participants appear to be focused on offering students a range of musical experiences, designed to develop various musical skills and abilities. Essential content of the teacher-participants' planning include preparation for making the music streaming service function, as well as tasks of mediation, or translation to other forms of expression, including bodily, sound, and visual utterances that could take on different meanings in the actual teaching situation or context.

To Collect Music as Open Listening: Didactic Choices of Content in a Fluid Landscape

... I hunt all the time, music that I want to use. That is a huge, important part of the teaching. And then, I almost can't search for music for any other reason.

The act of collecting music through Spotify can occur as open-ended listening to the service's offerings, generated through algorithms based on earlier use. Consequently, the presence of the service contributes to the landscape for "hunting," which is broadened in time and space. In some cases, the teacher-participants' didactic actions displace possibilities for their private listening. On the other hand, the participants emphasized that open-ended listening can lead to broadened genre exploration and insights. By revealing landscapes for exploration through frames established by the service, Spotify compels teachers to make didactic choices. The teacher participants needed to keep the specific students and their experiences in mind, simultaneously considering the potential of new landscapes for learning, in relation to the service's offerings. In this phase of teaching, digital literacy becomes crucial, since the teachers must balance between letting themselves be "mis-led," on the one hand, and concentrating with a specific focus on listening on the other. Through this process, teacher-participants use and develop a border-crossing ability, while cultivating aesthetic experience and creating functional listening situations for the students. In addition, subversive contra-reading is needed, so as to guard against the service becoming the source for didactic choices.

My analysis of data reveals that teachers are aware of certain limitations and manipulations present in the fluid landscape of music streaming. For example, collections of music are presented as "Discovery" and "Release Radar," with content depending on algorithms based on the teachers' earlier usage. The awareness required of the teachers suggests new forms of didactic choices, since the teacher-participants aim to offer students experiences with both specific types of music and strategies for exploring beyond such barriers. Aiming to offer students meetings with specific types or recordings of music, as well as strategies for going beyond such barriers. One teacher remarked, "...and here we have all countries, and then I search...we have, for example, *Top 50 Indonesia*, and then I find playlists, and music I would never have found in a cd-store. And then I base my teaching on that." If teachers know how to use the service's browser, specific educational content is possible to find.

As a result, the landscape offered by Spotify is further broadened through the use of other streaming services, such as *YouTube* and other digital and non-digital mediators. In addition to open-ended listening as a starting point for collecting musical content, my data analysis suggests that teacher-participants search for more specific content based on what a student or group wishes to experience, play or sing, according to specific thematic content or a specific activity. For example, finding a song that suits a specific dance represents a search for specific musical content. Using Spotify to find choral repertoire is an example of a search for the purpose of a specific situation, while finding music suiting the UN-day (<https://www.un.org/en/observances/un-day>) is an example of a search for music for a specific theme, in this case peace-related music. Here, the streaming interface, steered by algorithms, functions to guide search of the landscape: “It is an incredible resource in my job. For example, to be able to search for *related artists*. If you have used an artist very much, and want to find something similar to renew oneself, that can be done very quickly.”

Collected data highlights the teacher-participants’ formation of different sorts of social media groups such as *Music Teachers* or *Dance Teachers* groups on Facebook, in which the participants guide each other in negotiating the music streaming landscape and share tips, both among themselves and with students. Such sharing might constitute one way of extending one’s collection of music. As one teacher discussed,

Yes. For example, we share links to music via Facebook or WhatsApp or sms. It is a bit-nerdy; we are several colleagues who teach the same technique. This is a good piece for ‘circulation,’ or this is suitable for ‘diagonals.’ And then you have it in your phone and can listen to it and save it.

These nodes of interaction and technological connectivity reveal a model of “ownership” that is collective and shared. Suggestions related to a specific teaching context are not only shared in formal musical settings, but in a range of online forums.

Within varied educational contexts, teacher-participants share music through Spotify for the purpose of offering the learners possibilities for building their own music collections, simultaneously furthering and broadening their own musical experiences with the help of students.

Commentary of the teacher-participants suggests that the use of Spotify to plan for the teaching and learning of music is interconnected with utilization of a number of services and digital applications. For example, interviewees referred to the use of *Shazam*, an application that can identify a song played in any setting. Upon hearing an unknown song that could be used in teaching, participants indicate their use of *Shazam* for the purpose of automatically placing the newly located song in a specific *Shazam* list at the Spotify service interface, making the song available at a later occasion. Thus, the Spotify streaming service assumes a role in making music available to the teacher for the planning of teaching and learning, becoming an actor to be managed by the teacher. Yet, management of this role assumed by the service is a subject not yet discussed in music teacher education and in-service music teacher education.

Teacher participants reflected on organizing musical content using playlists that are related to specific situations and contexts. Secondary to the larger theme of structuring music collections on didactic grounds, a subtheme emerged, showing the organizational function of playlists in relation to specific teaching situations.

To Organize One's Collection: To Structure Music on Didactic Ground

Reflective commentary of the teacher-participants shows that organizing music by creating playlists and considering how the playlists are related to each other and teaching materials are key preparations for teaching music using Spotify. In this phase of planning, teachers were involved closely with the music streaming service, with all activities registered by the platform, forming the basis for further algorithm-based communication and customization. As playlists were created in relation to themes, grades, lessons, groups and activities, teacher-participants aimed to offer students experiences with music that contribute to development of musical knowledge. Some of the teachers organize playlists in relation to the playlists of other teachers. Yet others create private playlists, allowing these to remain unchanged overtime. One teacher found playlists to be central to organization:

Primarily I make playlists with songs that I know that I will need quickly, or with songs for future occasions. I think it is really smart to put them in a playlist, for example, in relation to a specific theme, as folk music, which I use in grade four.

Accordingly, teacher-participants built, organized, and continually updated their playlist collections, which they then relied upon during the actual teaching situation. Further accentuating the continual interrelation with the service and with others, the teachers trusted and leaned on their colleague's playlists and collections, integrating these into their own interfaces and placing searches for what material others use when the need occurs.

Teacher-participants described constructing some playlists for more general use, comprised of songs that were chosen from open-ended listening, rather than selected from specific searches. As utilized by the teacher-participants, these general use playlists often combined open-ended listening selections with songs shared and specified by students: "Yes, but I also put in pieces that I think that I will use, and that I have used earlier."

Other playlists among the teacher-participants' collections functioned as "storage banks" of music that suit specific themes, allowing the teacher or students to choose a piece or song from various options. For example, the teacher might have wanted to show variation upon a theme, and use a range of songs collected in one playlist accordingly. Through this curation, then, a student could find a track to practice a specific dimension of musical knowledge, as communicated in the syllabus. Such an approach may show that even students' listening habits and musical choices influence algorithms, in turn impacting teachers' future offerings and accentuating all five dimensions of digital literacy.

According to the teacher-participants, an additional motive for the creation of a playlist was documentation of which songs are played and sung in a specific grade. Analysis of data showed variation in how playlists are organized in relation to a teacher's total teaching assignments. While it is possible to use the Spotify streaming service to organize recorded music in relation to teaching activities, such usage demands subversive contra-reading among both teachers and students.

One of the interviewees relayed that she created playlists for each course she taught, each unique in relation to each school building, and even for specific moments among her duties, "so, that list can just be played throughout the lesson. Often I pause it now and then, but it would be possible just to play it."

This teacher-participant sorted playlists within the Spotify interface, so that each track follows in a specific order: main theme followed by subthemes, and then a new main theme. Further, the songs followed an order the teacher-participant has planned for use in the classroom. The collection was sorted in detail, on didactic grounds. In other words, the playlist became an actual guide throughout the music lesson, informing the order of activities and contributing to "setting the stage" and the dynamics within the classroom.

Teachers' work in planning for the teaching and learning of music using Spotify requires awareness of the service's limitations. Among collected data, teacher-participants referred to their supplemental use of other media, including cassette, LP, and other digital streaming applications. Songs that are mediated through such supplementary tools can be sorted into the Spotify system, underscoring the complexity of intertwinement with the streaming service.

A final aspect related to the organization of music in playlists discussed by the teacher-participants was the possibility of storing musical material for offline use within the Spotify application, if a class takes place with faulty internet connectivity. In such a case, offline storage created a sort of "floating musical landscape" in the absence of internet connection. Teacher-participants reflected on their decision-making in situations such as these, for example, deciding whether to rely on storage space on a device or on an external hard drive, should the intended material involve songs from other sources, creating further challenges.

All search activities, as well as efforts to organize playlists are registered by the Spotify streaming service, thus influencing future musical offerings, and demanding digital literacy among the teachers.

To Transform One's Collection: Didactic Communication of Streamed Music

The last aspect of planning for the teaching and learning of music in relation to music streaming concerned the activities of mediating and sharing the music a teacher has collected and sorted at the interface of a Spotify account. As teacher-participants relayed their thought processes focused on procedures for connecting devices to an amplifier or audio system, this phase of the process may be considered as a form of

transformation or translation. For example, one teacher discussed the ease of transferring sound based on location, describing that “when we have our examination in the park, I use a Bluetooth speaker connected to my cellphone.”

An intention to sing or play along with streamed music requires relevant and realistic pitch and tempo, thus necessitating musical insight on the part of the music teacher. Some of the interviewees reported their use of an application closely connected to the Spotify streaming service, the *Amazing Slowdowner* (<https://www.ronimusic.com/>), for the purpose of adjusting pitch and tempo.

The communication of music through body percussion, participatory sounds, or visual symbolic expression are included in this phase, taking place not as direct sound, but as accompaniment to a digital recording. In other words, for use in the music classroom, the music that is collected through the Spotify streaming service must be communicated through music making activities. One form of transformation the interviewees referenced was a process of learning the songs by heart, for the purpose of teaching through modeling with voice and instruments. As described by the teacher-participants, this process took place as a form of translation from one version of sound to another: “So, I planked it directly when I came to the school. I heard it on my way to work. And then I used it in class.”

In other cases, the music must be transformed into representative symbols or forms of expression, a version of translation discussed by teacher-participants as musical transcription. Such activities can be seen as bridges to the actual performance of music and musical teaching. The data collected and analyzed through the course of this study also suggests that music teachers use translations made by music colleagues, in the form of notes, sheets, “comp-sketches” or bass lines.

While these activities are not specific to music teachers in relation to Spotify, the ability to manage transformation or translation is discussed by the teacher-participants as crucial, since access to music is continually present and in flux in every moment. Thus, as described by the teacher-participants, the planning phase required active and conscious decision-making in relation to the offerings of the streaming service. Thus, musical knowledge and digital literacy are needed on the part of music teachers in order to offer students opportunities to fully experience music through streaming services, when and how they choose, representing a shift in musical materiality that transforms teaching content. Otherwise, there is a risk that the service takes on too much didactic power. With this, we are moved into the actual performance of teaching music using the streaming service Spotify.

In Sum

In sum, the didactic landscape is altered as the service Spotify enters the music classroom through each of the phases of planning, teaching, and learning through musical activities. The human-digital-musical interplay involves teachers, students, music, the streaming service, as well as other digital and non-digital devices, services, and

applications. As situated in a digital landscape, the task of the music teacher is to open and gain access to the students' life-worlds. In other words, by letting students share and encounter new musical experiences, music teachers evoke mutual curiosity and respect and establish a system of values whereby different experiences are shared, valued, and discussed in reflective ways.

According to the interviewees, the streaming service Spotify means a revolution for music teaching and learning. Ease of accessibility offers freedom, as well as responsibility, variation, and vastness of volume, as well as movement and fluidity in time and space. While inviting a streaming service into the music classroom complicates teachers' potential for showing curiosity and respect for the experiences of students, there are possibilities for the alignment of perspectives and fusions of horizons as related to the chosen themes of musical content. Depending on who is claiming power versus who is given power and responsibility in the didactic situation, musical landscapes are opened, and open themselves. Even if the teacher is the one who chose the musical content, the streaming service has an active role and thus influences what becomes possible to offer musically, as based on algorithms, as well as legal, economical, and technical factors. If the students are given power to choose, they are also invited into this multi-faceted situation, in which they don't exert full control, yet can offer musical content that the teacher has not selected or intended.

Thus, digital literacy should be a requirement for music teacher education, so that music teachers can be empowered in relation to streaming services and can cultivate the competencies needed to reflect upon the accessibility of music and the strategies that can be used to affect the power balance instantiated through music streaming services. In the didactic phase of planning for the teaching and learning of music, the teacher-participants strive to offer students ways of encountering music based on a number of choices, including the use of preconditions for the selection of music, the casting of a wide net into the unknown, or the deepening and widening of what is already known, as the teacher is consciously involved in the process, so as to avoid the potential for Spotify to take over as didactic actor.

DISCUSSION

Music Streaming Literacy as a Didactic Activity

These findings show that inviting streaming services into the music classroom can contribute to both fruitful and challenging teaching and learning situations. By relaying salient features of the experiences of teacher-participants, this study examined how music streaming services are used and negotiated in relation to formal music educational settings. Even if earlier findings have shown how streaming applications can be used for digital collaborative arts learning and distance teaching processes (Leijen, 2009; Cook & Crawford, 2013; Drioli et al., 2013; Ruthman, 2007; Walls, 2008), and to some extent, how streaming services are used for finding, experiencing and sharing

music as part of formal music education (Cayari, 2018; Cremata, 2017; Dougan, 2014; Wise et al., 2011; Webb, 2007), this study shows the complexity of the task of the music teacher with specific focus on planning as didactic action. When musical activities which occur outside of the classroom (Waldron, 2013; Whitaker et al., 2014; Kruse & Veblen, 2012) are mediated through the use of Spotify and moved into educational institutions, specific competencies are needed to manage the resultant didactic choices. Critical views of the consumption of streamed music (Aquiar, 2017; Morris & Powers, 2015; Ngyen et al., 2014) constitute an important content of compulsory music education.

Throughout this article, I argue that the teaching and learning of music are so intertwined with digital literacy as to be inseparable. Accordingly, placed in a fluid streaming, music educational situation, the concept of digital literacy becomes complex. When a streaming service is involved in the creating of teaching and learning situations, an even more demanding task arises: Earlier, “inner” experiences of music, as well as experiences of streaming services, are made conscious and developed towards “outer” common knowledge that is possible to share. In the current study, experiences of music, as well as experiences of the streaming service, become crucial themes of meaning making. I argue that a new concept is needed for the purpose of identifying and discussing the complexity of music classroom activities involving streaming services such as Spotify. To this end, I propose to describe this concept as *music streaming didactic literacy*, in order to show that music streaming literacy is both a didactic competence that teachers use in all phases of teaching, as well as a content for students to learn. The core of the activities planned and described by the teacher-participants exists for the purpose of offering students multi-modal listening experiences in shared situations, in which intention is focused on holistic bodily learning of music.

To be able to manage an altered landscape for the teaching and learning of music, the constitution of *music streaming didactic literacy* must be defined and discussed. Firstly, heightened awareness and continual re-evaluation are needed concerning musical content. Secondly, locating and accessing musical content requires the development of strategies that are simultaneously open and critically restrictive in relation to the streaming service. Thirdly, different content must be evaluated, analyzed and compared based on sound and recording quality, musicians, compression, etc., with the potential need for other sources to supplement the service at this stage. Fourthly, the content must be sorted, organized, applied, and communicated, in ways that make listening on equal grounds possible. If the students are given the responsibility to choose content via the service, these steps still need to be followed, with or without a guiding teacher. As music is shared, the necessary steps require discussion, so that, as the students develop musically, they simultaneously progress in terms of music streaming literacy. In addition, as the content offered by the service, as well as presentational effects, are continually changing, literacy must also include continual reevaluation of content in a constantly critical manner.

The task for the teacher, as well as teacher education, should be to cultivate a variety of aware listeners, or cultural citizens, instead of homogenous listeners, that “take what they get” from the service to become merely fruitful consumers. In order to create situations of meaningful, multi-modal listening, the service, requires heightened awareness within and outside the classroom. Thus, *music streaming didactic digital literacy* necessitates consideration as a central content in school music as well as in music teacher education.

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