Whoa.Nu: (Re)Constructing and Learning Swedish Hip-Hop Online

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Abstract: Whoa.nu started in 2000 as a community where members discussed all aspects of hip-hop in Sweden. The community became the most important place not only for discussions among members but also for releasing free albums and songs to the public and for arranging events. Moreover, the site was an educational hub for members to learn about hip-hop. The core of Whoa.nu was the community, wherein the communicating environment of members developed as artists, audience, and critics. Whoa.nu was not only a place for individuals’ learning processes and development but a place where Swedish hip-hop evolved and changed its regional frames, forming its own identity. The aim of this article was to present an analysis of the development of Whoa.nu as a learning platform for hip-hop in Sweden based on interviews with the two administrators of the site. Further, we wanted to use this as a steppingstone to discuss how listeners learned about popular music online during different eras. Two questions were at the forefront of this research: (1) How do the interviewees describe the internal views of the relation between how Whoa.nu and Swedish hip-hop changed over 13 years? and (2) how can Whoa.nu be understood as a learning environment? I henceforth present insights into how musical learning can happen outside of institutions and how Swedish hip-hop has grown from subculture to mainstream, which is how Whoa.nu outgrew itself. Hip-hop education is currently institutionalized in the same way that jazz and rock once were institutionalized. It went from being rebellious and subversive to being embraced by the larger society and integrated into academia. The results herein present a story of one example where musical learning in a subculture occurred. The insights presented, then, can help educators prepare for similar transformations of learning arenas in future musical subcultures. These insights could aid teachers and educators to assist students involved in music subcultures not discussed in schools. Hopefully, this article inspires additional ways of learning music.

Keywords: music education; online learning; informal learning; hip-hop; institutionalizing

1. Introduction

On 1 November 2012, Swedish national broadcasting radio woke me up with the news that the hip-hop community Whoa.nu was closing down. Suddenly, 61,000 active participants were without a home. As Cleo, a famous female rapper in Sweden, says in an interview: “This is where I learnt how everything works”. Implications from studying such a learning community can be of interest for educators in different kinds of institutions, particularly those which focus on musical learning and learning of other arts. Whoa.nu started in 2000 as a community where members could discuss all aspects of hip-hop, and soon even upload ideas for lyrics, beats, and songs to receive feedback from others. The community soon became the biggest and most important place not only for discussions among members but also for releasing free albums and songs to the public. Moreover, the site arranged rap-battles and other competitions, even keeping archives of hard-to-get older hip-hop releases (all
for non-profit). The core of Whoa.nu was the community, which featured artists, fans, and critics. Whoa.nu was a version of social media before social media became what it is today [1].

The life of Whoa.nu coincided with a period where Hip-hop in Sweden changed from being a somewhat marginalized subculture representing low cultural capital to becoming a mainstream expression where rap artist Timbuktu received awards in the Swedish parliament and rapper Ken Ring participated in the most popular family TV show, ”Så mycket bättre” (“So much better”). Whoa.nu changed with society and was not only a place for individuals’ learning processes and development, but became a place where Swedish hip-hop evolved and changed its regional frames and its own identity. The aim of this article is to present an analysis of Whoa.nu as a learning platform for hip-hop in Sweden based on interviews with the two administrators of the site. These interviews has served as a steppingstone to discuss the learning of popular music online during different era with different levels of cultural capital [2]. The interviewees described their internal views regarding how Whoa.nu and Swedish hip-hop changed over its 13 years of existence. The study also discusses how Whoa.nu can be understood as a learning environment. These areas of focus are not addressed one by one, but are rather entangled in a narrative analysis and summed up in the end.

Coming from the field of music educational research, this research departs from a curiosity of learning processes in less institutional subcultural groups such as what can be seen in Whoa.nu. Since the turn of the century, the research in the area of informal musical learning has grown rapidly with researchers such as Lucy Green [3,4], Tia DeNora [5] Göran Folkestad [6], Johan Söderman [7,8], and Andrea Dankić [9], to name a few. Academic journals specializing in musical learning outside of academia has also been established, such as the Journal of Popular Music Education, which formed in 2017. A significant feature of most of this research was, from the beginning, it used the garage band as the role model for “informal learning”. Typical garage band learning is a situation where a small group of male friends played together in a basement or a garage without knowing much about music, and through peer learning developed together as a rock band [10]. This is an ideal of autodidact musical learning that has been stable since the sixties, with bands such as the Beatles and the Rolling Stones as notable examples [11,12]. As Väkevä [13] points out, musical learning occurs in all kinds of different environments and in different forms. It is unnecessary to define informal learning practices only from studying garage band practices to narrow down possible understandings of what might be understood as informal learning. Lucy Green [3,4], in particular, has made a name for herself by taking learning practices from what is called informal learning practices (e.g., garage bands) and tested to introduce them into classroom curriculum content.

Online learning in forums has been studied from different angles and perspectives. Learning processes in forums are not dedicated to education and have been labelled “learning in the wild” [14] or “personal learning environments” (PLEs) [15]. This kind of learning is characterized by curiosity and autodidact strategies where different actors within each community adopt roles as experts, “teachers”, moderators, and so on. Even if the main body of research on informal music education has been conducted where people meet face-to-face, there are also examples of online communities. This has been studied by researchers such as Janice Waldron and Kari Veblen [16,17], Eva Georgii-Hemming [18,19], Heidi Partti [20], and myself [21–24]. As a sign of the increased interest in this area of research, a new Oxford handbook on the topic came out in 2020 [1]. Some of these studies references musical learning on educational websites where research concerns how special pedagogical enterprise works online, i.e., partly asynchronous and partly synchronous via video conference and chats. Others have investigated “autodidact” uses of resources such as YouTube to learn how to play music. A few studies have studied learning in forums [14,25]. In studies that considered the large Finnish forum mikseri.net, which existed simultaneously with Whoa.nu (and still exists), Partti [20] and Salavuo [25] showed that musical learning occurs in forums as a function for aspiring musicians to develop their identities.

Studies regarding online “schools” (e.g., institutional musical learning in the form of a webpage or an app) show that such platforms can be great resources for learners, but also that there are several potential problems associated with learning through any resource you might find on the net,
such as YouTube. Thorgersen and Zanden [22] showed that, although lots of young people learn to play an instrument through disparate internet resources, there are great challenges associated with bringing these tools into an institutional higher educational setting. Students are socialized into expecting structure and predefined goals for learning accompanied by carefully thought-out literature or step-by-step instructions for how to learn something [26]. Navigating a chaotic internet demands another set of skills that the institutionalized learner is not necessarily ready to take on. The article concludes that institutional learning practices should be analyzed in order to carefully adapt these to institutional teaching and learning [22].

The present study is a small interview study primarily based on in-depth interviews with the two people who ran Whoa.nu. Even if Whoa.nu represented a unique platform for analyzing the development of informal online learning, this was not the aim of this article (A preliminary analysis of this data was presented at the IAMCR (International Association for Media and Communication Research) conference in Hyderabad (2014). The plan was to use these interviews as a part of a larger study of the discussions on forums, but for different reasons, the researcher’s attention turned to other projects, which is why this study was not finalized until 2020, when the opportunity of publishing in this Special issue arose). Instead, this article departs from the story told by the Whoa.nu founders. Whoa.nu represented a unique window into online musical learning before the rise of social media platforms such as Facebook and Instagram, among others. The analysis is methodologically inspired by narrative inquiry, aiming to be “respectful, responsible, rigorous, and resilient” [27]. The results of this article can therefore be seen as an attempt to reconstruct, through an analytical process, the narrative of Whoa.nu. This is not an objective process, but involves the researcher’s personal empathic competence and knowledge about the area.

The article was written from a 2020 perspective where the development of hip-hop, in less than 50 years, has become the world’s most popular and commercially successful genre [28]. The story of Whoa.nu begins in the mid-90s at a time when Swedish hip-hop started gaining public recognition and ends in the mid-2010s, when hip-hop was on the verge of becoming the most popular genre among youth around the world.

2. Webs of Understanding

Education and research share the vision of constructing knowledge, albeit on different levels. While research strives towards new understandings that either challenge or extend the current knowledge of the world, education aims to reconstruct existing knowledge for its students. While these may appear to be different objectives, in practice much of research look like education in that it brings little new knowledge, while some education aims to challenge views on the world. In Deleuze and Guattari’s last book, What is Philosophy? [29], they discussed the differences between three kinds of activities that all construct knowledge as a primary task: Philosophy, science, and art. These are seen as different in both the way they construct knowledge as well as what kind of knowledge is constructed. While philosophy is described as the discipline that deals with constructing terms and language, and thereby extending our potential for thinking about the world, art is described as the discipline that constructs and presents new versions of the world. Since the world—or our understanding of the world—is understood as rhizomatic, potential (but not foreseeable) mental, artistic, discursive, and linguistic constructions and representations construct the world as much as they are being constructed. As a consequence, there can be no virtual reality as opposed to a “real” reality. The internet and the constructions there are just as real as face-to-face constructions or, say, boat building. Hence, the discussions in the forums at Whoa.nu are understood as situating the learning of music and discussions of hip-hop as much as if it had been in a formal classroom.

3. Method

The empirical material for this research came from two in-depth interviews with the two individuals who ran Whoa.nu for seven years, and had participated in the site from the start.
Additional materials used were the webpage itself, newsclips detailing when Whoa.nu closed down, and mail correspondence. Although these interviewees possess a broad and in-depth knowledge about the site, it is a particular knowledge and viewpoint that likely differs from how former Whoa.nu users experienced the site. Since both interviewees started as regular participants in the forums, I believe that some of their perspective is present in their answers. However, a further study with more participants with different roles would be necessary to investigate this.

The interviews were semi-structured and based on a mind map where three main themes guided the interview: (1) The interviewee’s personal relation to Whoa.nu; (2) the interviewee’s reflections upon the development of Swedish hip-hop during the years the site was active; and (3) the interviewee’s reflections upon Whoa.nu as an arena for learning hip-hop. The advantage of using a mind map as an interview guide is that it leaves room for flexibility to jump between topics, leave out follow-up questions, and to adhere the interviewee’s individual logic so that their story is the story told, not just answers to my pre-determined questions. The interview questions were designed to allow participants to talk about as many aspects of the forums as possible, but with them knowing that I was most interested in the learning aspects of Whoa.nu.

Both interviews were conducted via Skype. The first lasted for about 1.5 h, while the other lasted for almost 2 h. The interviews can be understood as semi-structured [30] and organized around themes in the format of a mind map. The interviews were recorded via a Skype-recorder software and transcribed and thematized as a beginning analysis in the qualitative analysis software Transana. In the case of both participants, I had several follow-up mail correspondences, both from me asking follow-up questions and from them remembering things they wanted to tell me.

The study has several limitations, i.e., its narrow focus and small empirical base. It could be argued that it would have been better to include more participants in the study or to even include the information on the website. The results are not generalizable yet there were no other people with similar experiences and competence that could add to the study. To expand the study in such a way would therefore lead to a change in focus. As it stands now, the focus of this article is distinct enough that it will hopefully work as a piece in a larger puzzle of research about hip-hop and online musical learning.

**Ethical Considerations**

According to the Swedish Research Council’s guidelines, participants should be informed of their participation in a research project, give their consent, and be informed of the aims of the research, as well as have the ability to withdraw at any time. For the interviews in this study, these requirements were met. The participants were presented with a letter of agreement in advance of their interview, wherein they orally confirmed that I was allowed to record the conversation. I did not know either participant at the time of the interviews.

**4. Narratives: From Subculture to Superfluous**

The two interviewees both described how they began working with Whoa.nu. They stated that they were each active members in the forums in the site’s early stages. They were interested in hip-hop and sought others with the same interests so that they could learn from, share with, and hang out with such likeminded people.

Informant 1 presently described himself as an upper secondary school teacher in physical education and a family man over the age of 30. In September 2000, he was an active member of the newly launched Whoa.nu. The site was founded by Ola Johansson, an upper secondary student exam worker.

It was his exam project, you know. He sat there in his boy’s room in Växjö and decided to make a site where his pals could hang out. It was also about hip-hop (Interview with Informant 1, February 2014).
At first, the site was called Backlash.nu and, when Informant 1 joined, there were only 400 to 500 members on the site. He was soon asked if he wanted to become an administrator at the site.

I was not very computer-literate, really, but it was more like I seemed active and could help out by maintaining a good tone, cleaning, and working in a good atmosphere (Interview with Informant 1, February 2014).

Backlash.nu grew quickly and soon merged with another and larger site, svenskunderjord.com (Svensk undergrund = Swedish Underground; my translation). This was not a forum-based site but had many visitors and, as such, increased the registrations for the forums. After having been together with Svensk underjord for approximately 5 years, the sites split again after personal disagreements between the founders. In 2004, Whoa.nu grew into the form it had until it ended in 2013. This moving of sites also meant that most conversations from before 2004 were forever lost. Some exceptions existed because they were saved by participants, such as Informant 1.

Informant 2 described how he was 12–13 years old towards the end of the 1990s, which is when he began surfing the internet and found message boards with likeminded people.

There were only so-called message boards where you just wrote to each other. There was nothing graphical, you know. You just wrote (Interview with Informant 2, February 2014).

Backlash started on the message boards. According to Informant 2, the level of netiquette (Netiquette” is a word constructed from “net” and “etiquette” and refers to how people behave online). Ref [31] was very low. People posted and commented whatever, the equivalent to what “YouTube is today” (Interview with Informant 2, February 2014). Informant 2 listed a handful of websites that were bigger than Whoa.nu, but which were primarily focused on writing articles and reviewing music. Among community sites, Whoa.nu became the biggest in Sweden within a few years.

The two interviewees described their cooperation as very tight despite having lived in different parts of Sweden and having different kinds of hip-hop tastes. Even if Informant 2 was from a big city and Informant 1 from a small town, they both described themselves as being alone in their interest for hip-hop during the late nineties and that they searched for others with the same interests. Informant 1 described himself as primarily interested in music as a listener, despite “as everyone else, me and a friend sat in his boy’s room and wrote lyrics and tried to rap, dreaming for a future where we would be in a big studio” (Interview with Informant 1, February 2014). This creative aspect of participation was soon abandoned because he instead engaged in reviewing new CDs that he imported primarily from the USA, many of which were hard to attain in Sweden at the time. Informant 2 described Whoa.nu as a collective where he felt at home but without the sense of ownership that he strived for himself, which led to him starting other projects such as a podcast about Swedish hip-hop.

At the beginning of the new millennium when Swedish hip-hop began to break through, the internet had become available to most Swedes. People started to search for others with similar interests online. This is the time when Whoa.nu grew tremendously. When the hip-hop boom in Sweden dipped in 2004–2005, those who were interested in hip-hop had found a home in the community at Whoa.nu. The activity at the forums virtually exploded, and they had to structure the forums so that different aspects of hip-hop obtained different forums:

We realized that it soon would become chaos. We could no longer have one forum about hip-hop; instead, we had to create several forums where discussions could be better structured. We created forums for those who just wanted to put up their lyrics and for those who only wanted to battle online, so to speak [. . . ] Then, the beats and producer forums had more detailed discussion for those who wanted to create their own music. Because it was at this time [2003,2004,2005] that it became possible for people to make music at home and distribute it on the internet easily (Interview with Informant 1, February 2014).
The forums eventually became quite diverse. The most active were the ones that generally discussed new Swedish and American hip-hop releases, yet people were also interested in developing as artists and producers. As such, there were forums with enough likeminded people to attract aspiring artists. This led to a situation where people started to upload finished songs and Whoa.nu extended the site to also include several downloadable albums and tracks, and, eventually, also organized offline events such as Whoa-pubs or Whoa battles. (In hip-hop, a “battle” is a competition between two rappers who take turns improvising lines to a beat, with the intention of trying to impress their audience the most with their wordplay and technical skill. There are similar traditions in other genres of music such as in Nordic folk music [7].) These events were filmed and recorded and later posted on the site. When Informants 1 and 2 took over the site in 2006–2007, they began to blog and to add editorial material to the site. At the same time, they administered the large amounts of forums and forum moderators and administrators. By 2009, Whoa.nu had transformed from a small message board into a huge platform wherein a single discussion thread included over 5000 posts. At this time, Whoa.nu even had something they called Whoa TV, which featured interviews and other reportage videotaped and published for free. All of it was non-commercial, according to Informants 1 and 2. The advertisements on the site barely covered the server costs.

The moderation and level of netiquette were listed as important factors in Whoa’s success. At the beginning of Backlash, people were put off when their music was met with negative reactions such as “this is the worst piece of shit I’ve heard. [. . . ] Go and die!” (Interview with Informant 2, February 2014). Later, a staff of people were carefully recruited as competent and knowledgeable moderators made sure that a friendly and respectful tone was maintained. If it was not, users were warned or even banned.

The community was big and well-behaved, yet, more importantly, was an important player in the Swedish hip-hop scene.

During 2004, 2005, and 2006, and almost until 2009, you could say the discussions were pretty deep and nuanced. Facebook had not yet stolen the whole market and Twitter had not seen the light of day. YouTube was around but it was no real competition since you could link to YouTube clips in the forums. The forums were really fun to hang out in! It was very active. You could write something in the morning and by the time you came home you had like 125 answers. It was very organic and alive at that time. Almost everyone had it too: Petter, Blues, and Dogge. All the Swedish hip-hop profiles had it. You know, Ken was active and wrote in the forums. It made Whoa a power-broker. This was where a lot of youngsters went (Interview with Informant 2, February 2014).

The social dynamics of Whoa constituted as a “home” for a large number of members. However, the social dynamics changed during the years and, as Informant 2 hinted at in the above citation, the competition from new social media was partly a factor in bringing Whoa.nu to its end. It is too simple, however, to explain the end of Whoa.nu with the coinciding growth of Facebook, Twitter, and other social media platforms. A powerful community such as Whoa should have had enough qualities to survive attacks from these more general sites. For example: how do people learn about and participate in hip-hop culture without a specialized site like Whoa.nu?

Browsing through the forums, it is obvious that Whoa provided an important opportunity for people to learn about hip-hop. As both Informants 1 and 2 stated, they had been searching for likeminded people in their local communities but it was not until they found Whoa.nu that they discovered competence and equal interest for their favorite genre. This sentiment can be observed in interviews with artists like Cleo. Forums and their community members functioned as both teacher, peer, and inspirer. Whoa.nu provided possibilities for receiving feedback on the quality of what you were attempting to create in a safe yet “real” space. It was safe because of the moderators and the level of tolerance toward people trying to be creative and “real” because it was an audience that was the base of Swedish hip-hop consumers. This kind of setting was special since most schools do not have
this necessary "real" aspect. Schools are institutions designed to prepare students for real-life and professional opportunities by simulating facets of the world outside the institution, i.e., authorities, culture, and tradition, all of which are assumed to be useful later in life. "Real" settings, on the other hand, are rarely available because the entrance fee to pass the gatekeepers require individuals to display a certain level a mastery. Several studies point out that many students experience music they learn in school music education as not "real music", but something else (i.e., "school music") [32,33].

On Whoa.nu, an aspiring hip-hop artist could audition a potential piece of art through different levels of readiness, testing how it would work as art in the genre, using the quality criteria of the genre itself. Of course, not all discussions were friendly and all comments nuanced, but the general level of discussions were respectful, and according to the interviewees (and my reading of the forums), many regarded Whoa.nu as their extended family. So how could it have ended?

Informants 1 and 2 referred to different factors when they explained how they viewed the end of Whoa. Firstly, they pointed to the change of the internet, i.e., that special-interest communities such as Whoa had to give way to more general social media platforms, such as Facebook and Twitter. However, the informants also pointed to a generational issue: those who grew up on Whoa.nu were the first generation where a large population learned to become active internet users, and this generation has now reached an age where other interests such as family and work took precedence over hobbies such as hip-hop. Informant 1 is a good example of this; he now works as a teacher at an upper secondary school and has a family. He can no longer put in the hours to work on a website like Whoa.nu. New generations seem to be less focused on special interest sites and instead use particular channels within existing frameworks for social media communication such as YouTube, Facebook, and Twitter. These factors combined could perhaps have been enough to explain the extinction of Whoa.nu, but I believe there is one more factor: The mainstreamification of Swedish hip-hop.

Since 2009, activity on Whoa.nu dropped steadily. In forums where there used to be dozens of answers to any post, posts written in 2013 were left unanswered or only had a few replies. Near the end of Whoa, the threads that engaged a large number of users were about how graffiti was dead, why hip-hop used to be better, and other generational grips. Of course, when the news reached users that Whoa.nu was being laid to rest, popular discussions emerged about how they would miss the site. Many users believed that the subcultural identity of hip-hop had been threatened and that most people arriving into contemporary hip-hop culture no longer need to search for hideouts where fellow subcultural comrades reside. Nowadays, these communities are everywhere and have even acquired cultural and social capital. This also means that hip-hop learning now occurs in mandatory music classes in school, through mainstream media and extracurricular activities in Sweden. Famous rappers are employed by after school clubs to teach rapping, beats-making, lyric writing, recording, and mixing. National public broadcastin has even produced a show called “hip-hop school” where they taught Swedish youngsters to make hip-hop (“Hiphopskola” https://uraccess.net/products/147673). There is, in Stockholm at least, a special interest in upper secondary school for hip-hop, Fryshuset. Despite the mourning of the inhabitants of Whoa.nu for the loss of a home, the home was more or less abandoned when it was shut down. As Deleuze and Guattari explains, such a causality could probably not have been foreseen and is not even wanted by those involved, but history moves in unpredictable and disruptive ways. Despite obvious drawbacks, such as a lack of activity, can now be found in a variety of places on and off the internet. The forums at Whoa.nu are now a museum of the birth of social media as a learning platform. To trace similar developments today would require complex data mining from a wide variety of sources more or less in real-time, since social media platforms such as Facebook consist of private channels that often live for a short while. Moreover, discussions on sites like Facebook are spread over a range of different rooms and channels.
5. Conclusions

This article argued that Whoa.nu represented a new possibility for enculturation and learning music where peer-learning was at the center. Whoa.nu represented an important personal learning environment for “learning in the wild” [14] in the first decade of the 21st century. Its popularity decreased in relation to a society in which communication became more fragmented, and where what was wild in the beginning of the century now can be perceived as quite manageable compared to today’s plethora of options and interactions. This study confirmed previous studies [14,22] on similar forums, which explained that an online community can be important in developing an identity as a musician. While there are still forums like Reddit [14] or closed groups on Facebook, the sense of belonging that participants testify to probably no longer exist.

While other forums from the time of Whoa.nu still linger on, such as the Finnish mikseri.net, Whoa.nu has closed down. Whoa was special because of its focus on only one genre, as opposed to a forum dedicated to general music making and learning. It can be understood as an online community where learning was a byproduct of a desire to connect with peers, which is similar to what Lucy Green refers to as informal learning approaches, yet in a completely different kind of community than a traditional garage rock band. When Whoa.nu outgrew itself, so did hip-hop as a subculture, and it is obvious that hip-hop education is now being institutionalized in the same way that jazz and rock were institutionalized. Hip-hop went from being rebellious and subversive to becoming embraced by the larger society and ushered into academia with the large capital behind it. To study Whoa.nu is relevant for understanding early hip-hop learning strategies in Sweden during the first 10 years of the millennium, in addition to the development of hip-hop in Sweden and how an internet phenomenon could be immensely successful before dying. The study also attempted to help understand the process of how subcultures can become mainstream, and how learning in subcultures can take place and find its forms through whatever means are available to participants before being merged with hegemonic culture, or as is the case with hip-hop, hegemonic popular culture. No one knows what the next subcultural musical expression to conquer the world will be, but it will certainly be both similar and different from the story of hip-hop. As educators, it is important to know the processes of the past to be prepared for the future.

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References

2. Bourdieu, P. Bourdieu’s theories are not used in any extensive way here, but the term “cultural capital” is useful to describe how music and genres struggles for different levels of status and privileges in society. Bourdieu, Pierre. In Distinction: A Social Critique of the Judgement of Taste; Harvard University Press: Cambridge, MA, USA, 1984.


27. Barrett, M.S.; Sandra, L.S. Narrative Inquiry in Music Education [Electronic Resource] Troubling Certainty; Springer Berlin/Heidelberg, Germany, 2009; p. 20. [CrossRef]


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