Creative
learning online

WeScratch: an inclusive, playful and collaborative approach to creative learning online

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Abstract

Purpose – Many educators currently face challenges when trying to engage students in creative learning experiences online, where it can be particularly difficult to move beyond the transmissive approach typical of video lessons and webinars. The purpose of this paper is to present WeScratch, online workshops designed as welcoming, playful and peer-supported spaces where educators can experience first-hand an alternative approach to learning online, as they actively learn to create projects using the Scratch programming language.

Design/methodology/approach – The WeScratch experience is designed as a hands-on, creative online workshop where participants spend most of their time making projects while they share ideas with peers. The authors describe the structure, platform, facilitation and activities of WeScratch workshops, highlighting the main design choices and their underlying motivations.

Findings – This study discusses how this environment has engaged educators from around the world to experiment with Scratch in a playful way. The authors give examples of how educators have described the value of the experience, both as learners developing their skills and as designers developing similar learning experiences for their students.

Originality/value – WeScratch provides a model for how to design online learning environments to be more inclusive, playful and collaborative. Although WeScratch workshops are designed to support learning to create with code, the authors see the wider potential for applying this approach to other online learning environments to broaden participation, build connection and expand creative expression.

Keywords Online learning, Collaborative learning, Teacher professional development, Computational thinking, Coding, Scratch

Paper type Case study

Introduction

Over the past decade, interest in coding has been rapidly increasing in education at all grade levels (Meyers, 2019). In particular, Scratch has been widely adopted in schools, libraries and community centers as a way to introduce young people to coding and computational thinking across subject areas (Resnick and Rusk, 2020). Scratch is designed to support creative learning experiences by engaging young people in making projects that are

personally meaningful, in collaboration with others, in a playful spirit (Resnick *et al.*, 2009). The broader goals of Scratch are to enable learners to develop creative thinking, collaboration and communication skills (Kafai and Burke, 2014).

Though Scratch as a tool has been growing in popularity, educators often face challenges applying the underlying pedagogy behind its design (Brennan, 2015). In many classrooms, Scratch is introduced using traditional, passive teaching methods, rather than supporting active and engaged learning.

Recently, because of the global COVID-19 pandemic, many schools and informal coding clubs for children around the world had to suddenly redesign their activities for an online environment. As a result, educators face the additional challenge of engaging their students online, where it appears to be even harder to move beyond the transmissive models of the video lesson or the webinar, which often focus on one-way delivery of content. Under these circumstances, it becomes even more important to provide educators with examples of more active and engaging learning experiences online.

WeScratch are online workshops designed to introduce educators worldwide to learn to create with Scratch, while experiencing first-hand an online learning environment that is inclusive, playful and supports peer learning. In addition to helping them improve their ability to code with Scratch and develop computational thinking skills (Brennan and Resnick, 2012), the main goal of these workshops is to provide educators with pedagogical inspiration and a model for how they can use online spaces to support collaborative and creative learning.

In this paper, we present the WeScratch approach to online coding workshops. We begin by sharing the background of the workshops and the tools used. We then describe the structure, facilitation and activities of WeScratch highlighting the underlying motivations. Finally, we share the principles that have guided our implementation of the workshops and discuss future research possibilities.

Our approach to online learning

The typical approaches to online professional development for teachers use a presentation format where one person goes through a series of slides, explaining concepts and giving instructions to follow. For example, in some online introductions to Scratch, the focus begins by describing the importance of learning to code and defining basic computer science concepts (such as algorithms) – even before showing what Scratch looks like and what people can create with it. Introductory lessons often explain the interface of Scratch by going through the list of possible programming blocks. Then very detailed instructions that participants are supposed to follow step-by-step to recreate the identical project are given. Some participants interact with the speaker by asking questions or placing comments in the chat. Overall, the experience is one of passively watching someone give an overview with little or no opportunity to try it themselves or engage in peer learning.

WeScratch takes a very different approach. The WeScratch experience is designed as a hands-on creative workshop where participants spend most of their time making projects while they share ideas with peers. The co-hosts briefly introduce Scratch by creating a simple project while modeling exploration and playfulness. They then invite participants to experiment and create their own projects. Participants spend most of the time making projects in small breakout rooms, where they can support one another on their works-in-progress. Near the end of the workshop, everyone gathers back together to see the range of projects created and learn from one another's explorations. Collaboration and connection are supported throughout each aspect of the WeScratch experience.

This approach is informed by research on learning as a social process (Brown *et al.*, 1989) and the role of context, activities and culture as the basis for participants' engagement in

learning. Building on constructionist learning theory (Papert, 1993), we explore the design of an online space where participants can create projects that they share with others while learning to code (Koh, 2013).

Context

WeScratch workshops are mainly offered as part of a global outreach effort called Learning Creative Learning (LCL) – a free online course and community of educators who explore the principles of creative learning (Gabaree *et al.*, 2018). The online nature of LCL and WeScratch allows a large number of people from all over the globe to participate and connect with a community of people with shared interests.

After several initial prototyping sessions, we offered a series of WeScratch workshops in October to November 2019, with sessions twice a week for six weeks, hosted by the authors as part of the Lifelong Kindergarten group. At the moment of writing, we recently completed another 7-week series. Between 80 and 200 participants have joined each session from all across the globe.

Platform

WeScratch is presently hosted on Unhangout, an open-source online learning platform specifically designed to support online community gatherings rather than online lectures (Schmidt *et al.*, 2014). It consists of a main "lobby" where participants interact through a text-based chat while hosts broadcast pre-recorded or live stream videos. From the main lobby, participants can join breakout rooms to participate in small group video calls, where they can share their webcam video and screens.

Though other videoconferencing tools also allow breakout rooms, we chose Unhangout for two main reasons. First, it allows everyone to share their screen simultaneously. As participants can see one another's screen at the same time, they can easily exchange ideas, provide support and watch others while they are creating. Another reason we chose Unhangout is that users can select which breakout room they want to enter, for example, based on the language they feel more comfortable speaking or who they see already inside.

Structure

Each WeScratch session is 90 min long and is composed of three parts: greet, make and share.

Greet – Welcome and activity introduction (15 min)

Participants can join up to 30 min before the event starts to get familiar with the platform, test their audio/video in the "Welcome Room" and chat with other participants in their language. Everything in this phase is designed to create an informal environment where participants feel that they are welcomed, connected and supported.

As the session starts, a live video is broadcast where two or three co-hosts welcome participants and introduce them to the agenda and activity for the workshop (Figure 1). In the introduction – and throughout the rest of the session – no assumptions are made about participants' previous experience, in terms of participation in previous sessions or general familiarity with Scratch.

This brief demo is designed as a short and playful conversation, rather than a long video lesson, to quickly get people into the hands-on experimentation. Initially, we used a pre-recorded video but soon realized that a live broadcast allowed us to connect with participants and interact with them in a way that shows we are there with them. Although hosts speak in English, other facilitators type translated summaries in the chat to make sure everyone is included.

Before sending participants off into the breakout rooms, co-hosts build a simple Scratch project in a collaborative way, thinking out loud and talking to one another. This short demo models a project-based introduction to Scratch, as opposed to starting with computer science definitions or long descriptions of the interface. The demo also helps position co-hosts as participants, makes their creative process visible and models a collaborative interaction.

Make – Project making in breakout rooms (45-60 min)
Participants then transition into breakout rooms to work on their Scratch projects for about 1 h. We keep breakout groups relatively small (up to six people per room) to give everyone the chance to participate actively and to make peer interaction manageable.

Breakout rooms are organized by language, rather than by skill level with Scratch. This allows non-English speakers to communicate more easily with one another and it also creates the conditions for a meaningful exchange among people with different familiarity with Scratch (Vogel *et al.*, 2017).

Because multiple screen sharing is possible, people can easily look at one another's screen to get inspiration, receive help or simply observe and learn from someone else's creative process. Although we encourage people to activate their webcams and screen sharing, we also make clear that any form of participation is legitimate and welcome (Lave and Wenger, 1991) and we noticed that sometimes participants need some time before they feel comfortable enough to show themselves or their screens to others. The breakout rooms also feature a real-time collaborative text-editor where participants can find information in their language and communicate by typing in different colors (Figure 2).

Share – Collective project exploration and celebration (15-30 min)
In the final part of the workshop, participants add their projects to a common studio so they are accessible to everyone, then leave the breakout rooms and reconvene in the main lobby. In the lobby, co-hosts welcome everyone back and then explore and demonstrate some
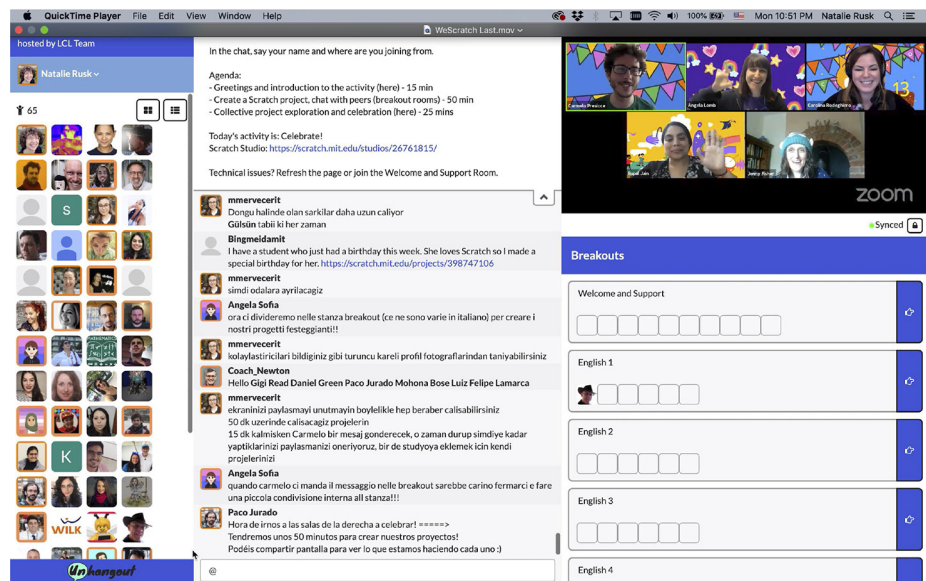

Figure 1.
Hosts and facilitators greet participants and introduce the activity

projects, taking purposeful steps to highlight the diversity in genres, languages and ideas. The diversity of the shared projects is one of the ways we evaluate the success of the workshop (Figure 3). If all the projects looked similar, it would mean that our prompt was not generative enough or that participants were too biased by the sample projects.

Scratch projects often include animated text, dialogues or recordings of people's voices. We consciously showcase at least one project for each of the language communities represented in the workshop so that all people feel seen and heard. We might feature some complex projects to inspire and show creative possibilities, but we also highlight simple and unfinished projects. We give special attention to first-timers: people who make and share their first Scratch project during the online workshop are cheerfully celebrated by hosts and by participants in the chat. The goal is to make everyone feel included and encouraged no matter what language they speak and where they are in their learning trajectory.

The final showcase is also an opportunity to see what others have made and to look at the underlying code, highlighting ideas that may be inspiring and useful to others. We always avoid technical jargon and approach others' code with curiosity rather than judgment. Although we are looking at projects, we are focusing attention on the creative process – for example, noticing evidence of tinkering (Resnick and Rosenbaum, 2013) or modeling the process of debugging (Haduong and Brennan, 2018).

Facilitation

Throughout the workshop, participants are supported by a team of facilitators. Facilitators are not Scratch experts, but they are familiar with the structure of the workshops and with the pedagogical values underlying Scratch and the WeScratch community. Their main role consists in guiding participants through the process, assuring that everyone feels comfortable and heard and occasionally helping with technical troubleshooting (Roque and Jain, 2018).

Most of them have participated in previous workshops and now offer their help as volunteers. They come from all over the world and many speak another language in addition to English. The facilitation team currently includes people who speak Portuguese, Spanish, Italian, Turkish, Arabic, French and Japanese. Therefore, they are able to support participants by translating learning materials in advance, typing in the chat summaries of what co-hosts are saying during the live videos and facilitating conversations in the language-based breakout rooms.
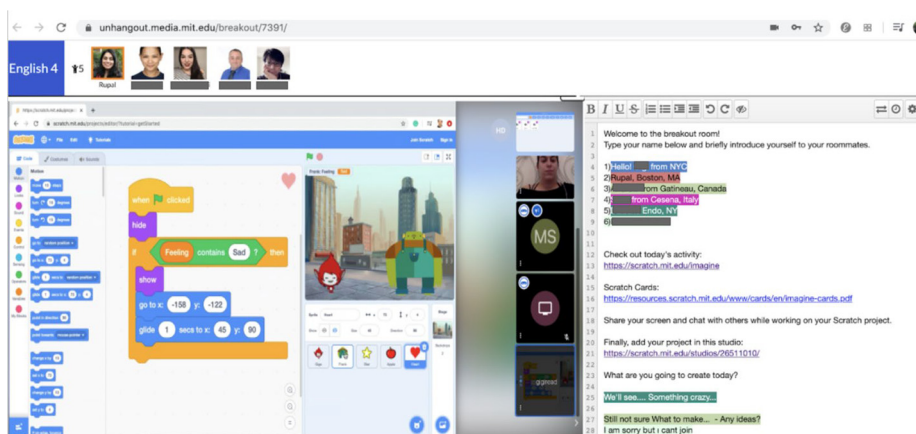

Figure 2.
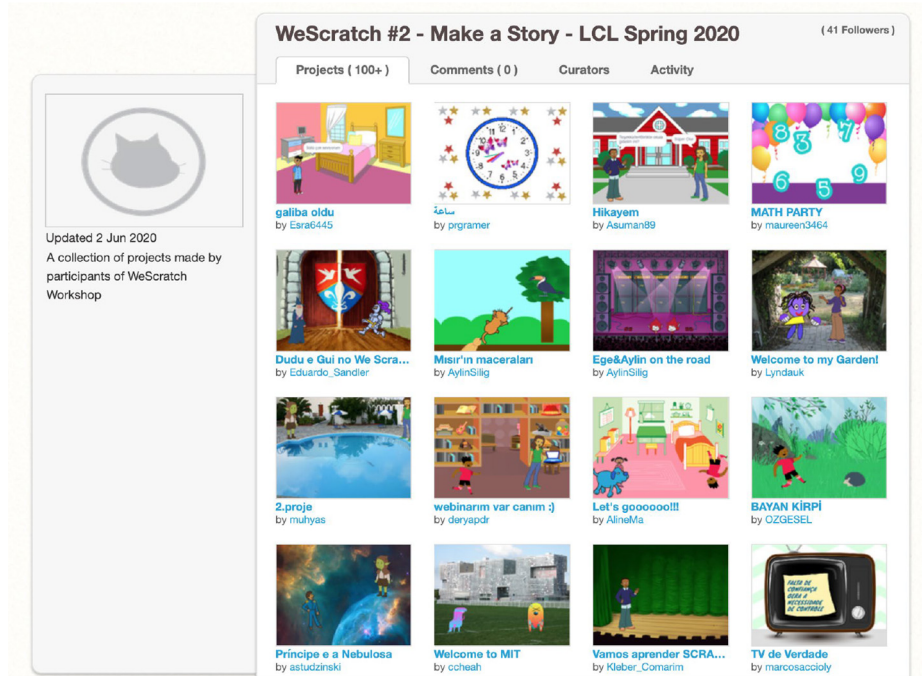Participants support one another on projects in a breakout room

ILS

Figure 3.
Participants added more than 100 projects to a shared studio during a WeScratch session

Even though they are easily recognizable by an orange outline around their profile picture, facilitators are most importantly participants: they work on their own Scratch projects and interact with others as peers. In one of our debrief meetings, one facilitator referred to the "orange outline curse," to describe how new participants might often expect a lecture from facilitators. Instead, in our workshops, facilitators lead by example, modeling constructive and collaborative behavior, creating an inclusive and kind space, supporting participants with technical issues and helping people to connect and support one another (Vossoughi *et al.*, 2013; Cole *et al.*, 2019). Some of the contributions of facilitators include facilitating the initial introductions in the breakout room, making sure every participant has space in the conversation, encouraging people to share their video or screens if they feel comfortable, modeling curiosity as they work on their own projects, welcoming people who might show up late and helping them to get started, helping people connect to one another, doing some basic technical troubleshooting or pointing participants to technical support and gathering information about participant experience that is helpful for organizers.

Facilitators work closely with our research team, participating in debrief meetings and in weekly facilitation meetings. Debrief meetings happen right after the workshop and are an opportunity to share with the broader group what happened in the different breakout rooms and reflect on the experience (Figure 4). Each of the facilitators shares their observations and reflections in a shared document and then some of the open questions are discussed as a large group. The facilitation weekly meetings are an additional opportunity to reflect on facilitation more broadly, coordinate around the next activity and iteratively improve the design of the workshops.

Activities

WeScratch activities are open-ended and designed around a generative theme or a creative prompt. Examples of activities include creating interactive animations of the letters of your name, developing an animated story or making a project to share your love for someone. Because WeScratch activities invite open-ended exploration around a shared theme, participants are always welcome to join, regardless of their previous attendance. Additionally, activities can be enjoyed multiple times by the same person because they can inspire a different project and lead to learning something new.

All the prompts are designed to have a "low floor" and a "high ceiling," meaning that they allow for simple as well as sophisticated projects and they are therefore appropriate and enjoyable by novices as well as experienced users. This characteristic allows us to create an environment where people with different skill levels can work together in the same breakout room and learn in a heterogeneous social environment, similar to the Samba Schools described by Papert (1980).

Also, activities are designed to have "wide walls" (Resnick, 2017), meaning that they do not have a "right answer" or a specific similar outcome expected for everyone. On the contrary, wide-walls activities allow for a vast diversity of projects as an outcome and promote multiple pathways into the learning experience (Rusk *et al.*, 2007). Each participant can work on a project that is personally meaningful to them and are therefore more likely to persist in the face of the challenges or ask for help from their peers.

Overall, WeScratch activities provide a meaningful context where learners encounter a variety of concepts when they are most relevant to them. When learners meet new concepts in the process of creating a project, they find them more approachable, useful and memorable (Papert, 1996). This contrasts with typical coding lessons that are focused on
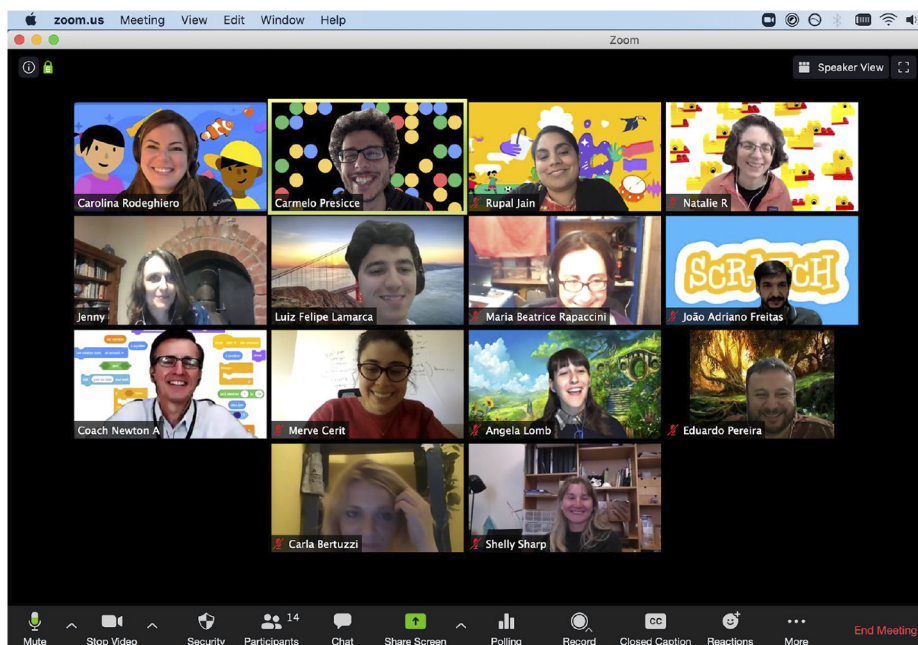

Figure 4.
Facilitators meet
to debrief a
WeScratch session

conveying a single computational concept with a narrowly defined coding exercise. WeScratch activities enable educators to experience firsthand what learning through open-ended projects is like and how meaningful and powerful this approach can be.

Discussion

During the past year of WeScratch workshops, participants have shared their experiences and reflections, revealing how the environment and community have influenced their perspectives and practice.

In a recent WeScratch workshop, Tanjima, an educator who was joining for the first time, typed this message in the main chat near the end of the session:

> It was a kind environment! I felt like I can ask questions without being judged! that opened up my opportunity to explore! Jenny [the facilitator] was awesome!!!

Her comments highlight how WeScratch workshops support educators as learners. This is exactly what we wanted to achieve with WeScratch. We wanted to create an environment that is *inclusive*, where participants such as Tanjima feel welcomed and supported with kindness; *playful*, where they feel free to experiment and ask any type of questions without feeling judged; and *collaborative*, where people have the opportunity to connect and help one another, such as Tanjima and Jenny did in their breakout room.

In addition to engaging as learners, some educators have become interested in WeScratch as designers. For example, in late February 2020, as soon as schools closed in Italy because of the COVID-19 pandemic, Anna – a primary school teacher from Turin – sent a message to our team in Italian. She had participated in a WeScratch workshop a few months earlier and now wanted to learn more about how to organize a similar experience for her 4th graders. She was not experienced in using videoconferencing software, but felt strongly that this was the type of experience she needed to spark the interest of her students during this difficult time. With some technical tips and a bit of encouragement from our team, she was able to host several online Scratch workshops for her students, starting with the same activities she engaged with as a learner during her WeScratch participation.

Participants also have been organizing online activities inspired by the WeScratch structure, design principles and facilitation practices. For example, organizers of Scratch Day in Mexico had thought of canceling their annual Scratch Day celebration because of the COVID-19 lockdown, but inspired by WeScratch they hosted the event online following the structure of Greet–Make–Share, offered activities to children in different breakout rooms and expanded participation to educators and learners in other Latin-American countries. Similarly, when CoderDojo coding clubs had to move online, organizers from Italy who had participated in WeScratch chose an online platform that allowed for simultaneous screen viewing in the breakout rooms, encouraging peer interaction and project sharing among children – while also embracing the model of facilitator as participant, making projects and exploring ideas along with participants. Facilitators of WeScratch workshops have now organized online workshops in Brazil, Turkey and India.

In our future work, we will further investigate participants' experiences as learners and as organizers. Studying more closely their experiences will help us better understand the impact of our work, improve support for educators in different contexts and inform the design of future iterations of WeScratch.

WeScratch workshops are designed to encourage and support participants to develop as both learners and designers. Although WeScratch engages participants in learning to create

with code, we see potential to apply this approach to other online and in-person learning contexts – to build more learning environments that create a sense of belonging, encourage playful exploration and support peer connection and collaboration.

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