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From SuperGoo to Scratch: Exploring creative digital media production in informal learning

Kylie A. Peppler and Yasmin B. Kafai
University of California, Los Angeles, USA
2128 Moore Hall - Box 951521
Los Angeles, CA 90095-1521, USA
kpeppler@ucla.edu, kafai@gseis.ucla.edu

Abstract. Based on work in media studies, new literacy studies, applied linguistics, the arts and empirical research on the experiences of urban youths' informal media arts practices we articulate a new vision for media education in the digital age that encompasses new genres, convergence, media mixes, and participation. We first outline the history of how students' creative production has been used to meet the goals of media educators and highlight new trends in media education that are instructive for creative production. Our goal is to introduce and situate the new ways in which youth are participating in creative production and the subsequent impact that this might have on teaching and learning media education today. Findings from an ethnographic study are used to demonstrate the potential of youth producing new media, such as videogames and interactive art, on media education research and practice.

Media education in the digital age needs to take into account recent theoretical developments of cultural convergences, media mixes, and new forms of participation. New genres such as hypertext (Bolter & Grusin, 1999), which break with the linearity of traditional media, are now used on the Internet, and marginalized media such as videogames (Gee, 2003) have gone mainstream, all contributing to the phenomenon of media mixes (Ito, 2006). These new media mixes have been most prominently discussed within the context of convergence (Jenkins, 2006a), suggesting that we need to examine how the participatory culture has radically shifted how we conceptualize the field. As the lines between

consumers and producers become less distinct, the design of interactive content has become part of the media landscape (Jenkins, 1992, 2006b; Gee *et al.*, 2006). Who has access and participates in digital media design and consumption also determines who is included and excluded in this setting. These developments need to be seen against the backdrop of larger economic and political changes that present greater concentrations of media ownership while having underground and urban cultures influence mainstream media.

Amidst all these new developments, one aspect of media literacy that has received much less attention is the role of creative production (Greenaway, 2001). Creative production refers to youths' designs and implementations of new media artifacts such as web pages, videogames, and more. We would like to suggest a new emphasis toward the production of materials as a way to broaden the range of digital media genres and texts, cultural practices, and critical reflection in media education. Youth are not only consuming new media at accelerated rates (Rideout *et al.*, 2005), they are also becoming producers of these new genres in larger numbers, if participation in MySpace, YouTube, and other spaces are indicators of current trends. Moreover, for media educators, creative production may also hold additional affordances as a research methodology and a tool for classroom inquiry.

Our paper examines creative production as a pathway for youth to participate in today's new media culture, question its conventions, and integrate new media such as videogames into "media mixes" of images, video and texts. We argue that youth require some basic understanding of how to construct and design new media in order to become critical participants in today's media culture. As the title of our paper suggests, in doing so, youth need to go beyond tools such as Kai's SuperGoo™ (ScanSoft, Inc., 1999) that allow for basic image manipulation but are limited to built-in features. Media education needs to go a step further to provide youth with experiences creating and designing their own interfaces and applications with tools such as Scratch, a media-rich software design environment that was recently developed by the Lifelong Kindergarten Group at the MIT Media Lab (Resnick, Kafai, & Maeda, 2003). Such new directions in media education are particularly important for urban youth who are often seen as pushing new adaptations and transformations of media but also as standing on the sidelines of technology developments and productions. The work reported in this paper draws on three years of ethnographic observations in a Computer Clubhouse located in the midst of an immigrant and economically depressed neighborhood in South Central Los Angeles, USA. Our goal is to articulate what youth can learn about media education through creative production within an informal setting. The examples from our case studies focus

on videogame design, music video productions, and interactive art and will illustrate just the type of media mixing, convergence and participation typical for new media literacy.

The role of creative production in media education

Media education has historically been dominated by the critical analysis of media texts; rarely exploring the role that creative production plays in media literacy. In the 1980's, theorists in the field of media education either dismissed or condemned students' creative production (see for example Masterman, 1980, 1985; Ferguson, 1981; Alvarado *et al.*, 1987). According to Buckingham, this was due in part to the widespread belief that student work lacked intellectual merit but also to the "...[t]echnicist' emphasis on production skills that was apparent in some of the new vocationally oriented media courses" emerging in the mid-1980s (2003, p. 124). Work produced in these media courses were seen by many as nothing more than reproductions of media ideologies, not as critical end products of creative expression. A critical understanding of media, therefore, became the key priority in this era, rigorously subordinating the 'expressive,' 'creative,' or 'participatory' potential of production.

This perspective has been challenged and revised over the past two decades. For the most part, today's educators and researchers (see for example Buckingham *et al.*, 1995; Buckingham, 2003) now argue that production is a central component of media education. In the classroom, however, there still seems to be an emphasis on 'critical analyses' over production (i.e., reading over writing practices). Initially this could be explained by hurdles, such as the lack of portability and reliability of older analogue media. Current technological developments have made more complex forms of practical production more accessible and easy to manage in today's classroom environment (Stafford, 1994) — although impressive student work can happen with less sophisticated materials (see for example Cunningham, 1998).

There is currently little research on creative production. Those media educators that have done work in this area have predominantly been interested in youths' experiences producing media on one particular platform (i.e., television, radio, newspaper, etc.), and mostly within the classroom context (see for example Booth, 1999 or Loveless, 1999). We call this the "platform model" approach to teaching and learning about production. While there are many merits to this approach, it largely ignores the importance of preparing youth for what Henry Jenkins calls the new 'Convergence Culture' (2006a/b). Convergence culture is

the merger of previously distinct cultural forms and practices and emphasizes how one can choose among many forms to participate socially in new media cultures. The notion of a “participatory culture” expands our initial understanding of the older sender/receiver model predominantly emphasized in media literacy to include the “skills needed for participation and collaboration — speaking as well as listening, writing as well as reading, producing as well as consuming” (Jenkins, 2006c, p. 2). Although the convergence culture has been widely acknowledged by media educators (see for example Buckingham, 2003), there has been no formal realization of what this might mean for creative production within media education. In our view, creative production prepares youth to participate in the technical, social, and political aspects of the new convergence culture by providing youth with the skills, tools, and knowledge necessary to engage in the evolving media landscape.

There are three key arguments for the inclusion of creative production in the new media education curriculum. First, creative production can be seen as a new emphasis on the critical writing of texts, broadly defined as written texts, software programs, media images, oral discussions, or other media objects. Writing is especially important as we consider youth’s place in society as the next generation of creators of this new media content. Secondly: What texts are youth writing? We envision that youth need to be able to move beyond participation via blogging and game playing to create their own videogames, media art, or graphical user interfaces, similar to the way that thousands of individuals participate in the creation and sharing of downloadable widgets for Mac OS X Dashboards. New visual programming software, such as Scratch, will enable a greater number of people to participate in this type of creative production. Conversely, others in the field are examining how software interfaces, themselves, subtly constrain or enable verbal and spatial thinking and shape the content and cognitive style of information being presented (Tufte, 2006). The problem of the interface is absent from most media education, but is very much in line with the Jenkins *et al* discussion of the “transparency problem” (2006d), described as “the challenges young people face in learning to see clearly the ways that media shape perceptions of the world” (2006d, p. 3). Lastly, who are youth writing for? Having an audience has already been found to be crucial to youths’ motivation for creative work (Sefton-Green & Buckingham, 1998). In a wired classroom or after-school context, feedback can be received from a distributed audience, and not just the classroom teacher. This changes the role of the teacher in the media education classroom to one that is not just the sole provider of information but also a facilitator or guide of such space.

A perennial concern for media educators is the relationship between creative production and critical media analyses. In our view, creative production pushes youth to question their current observations and understandings, make explicit their assumptions about new media, and discover the conventions of writing the language of new media by learning the visual, semiotic, aural, and technological literacies necessary to inscribe one's self into the larger participatory culture. What takes place during creative production is a critical reflection on what constitutes new media, how it is constructed, and how one would question or use these same design conventions towards different ends. The traditional role of formal media education still remains in media production because it involves stimulating critical reflection on a greater variety of media texts and engendering youth to critically write and reformulate those ideas. In this context, creative production operates on two levels to serve both an educational and a cultural/political function in media education. Primarily, the educational function of creative production lies in learning to write these multimodal texts but also in understanding the complexity of the design process. The cultural and political function of production includes a better understanding of larger issues of power: Who is doing the writing? Whose voice is being heard? Who is being positioned in certain ways within a particular text and for what purposes? In addition, the emphasis on writing empowers individuals to insert their self to redefine their position within these power structures.

Tools, products, and pedagogies for creative production

We propose creative digital production as a way to integrate these theoretical developments into media education by considering *tools* that facilitate convergence, participation, and media mixes; by developing *applications or products*, such as videogames, that allow for participation; and by providing a *pedagogy* that focuses on personal designs within a larger social setting. We have designed Scratch as a useful tool for meeting many of the goals of digital media education (Maloney *et al.*, 2004). Scratch differs from other programming environments (Guzdial, 2003) by using a familiar building block command structure that enables designers to create or incorporate existing images and sound files into their videogames, interactive art, and video productions — allowing for easy media mixing. Visual programming provides low barriers to artistic expression and civic engagement, a key requirement for inclusion in a media education curriculum. The type of media-rich programming we have in mind has not previously been considered within the context of media education.

This may be due to several reasons including but not limited to the fact that computer programming was previously located within mathematics and science, and not considered to be part of the media landscape. Rather than focus on coding as in the traditional programming approach, we prefer to design software and interfaces that are visible to the outside world and have youth question the values and practices of the genre (Lessig, 1999; Hyland, 2002).

Videogames, because of their prevalence in youth culture, present a particularly promising application for creative production. Those who have discussed videogames have mostly taken a spectator/theorist approach to game playing (Gee, 2003; Carr *et al.*, 2006) and have not paid much attention to videogame making. Those who have studied videogame making have most often come from other disciplines or areas within education (see for example Kafai, 2006). In a previous study, Sefton-Green and Buckingham found that students were drawn to software programs that were “sufficiently demanding to warrant sustained attention but accessible enough to use” (1998, p. 36). This suggests that youth, as videogame players and software users, are discriminating readers of the genre and can judge the merits of different videogames or software programs. However, in our experience, youth find it hard to articulate what makes a particular videogame or software application “good.” Asking youth to design software and/or videogames challenges them to make these assumptions explicit and asks them to build upon this knowledge to make informed suggestions for change. In addition, the genre of videogames can limit the interest that some individuals (particularly girls) have in this type of creative production. Scratch offers an opportunity for youth to create multiple genres of work and even to mix or create new genres that goes beyond just a technical mixing of computer applications.

The type of creative production that we propose requires a well-articulated theory of learning and subsequent pedagogy to support it, particularly one that emphasizes the expression of ideas, values and genres. A pedagogy with such a design orientation can be found in constructionism, which places learners in designer roles and ties together the importance of designing artifacts that are of relevance to a larger community (Papert, 1980, 1993; Kafai, 2006). Constructionism places equal importance on the individual learner and on the role of social participation. Here the individual, the artifact, and collaborative input of the community shape learning, participation, and sharing. In the case of creative production today, the community could be described as both the distributed online and offline community. Sociocultural constructionists argue that the individual and the community develop reciprocally through “shared constructive activity that is resonant with both the social setting that encompasses

a community of learners, as well as the cultural identity of the learners themselves” (Pinkett, 2000, p. 4). Accordingly, a tool that will promote the developmental relationship between the individual and the community will enable youth to express their cultural heritage, have a broad communicative value, and allow for an information and resource exchange (Pinkett, 2000). We propose that Scratch offers just such an opportunity. Constructionism thus serves the goals and aims of media education because it focuses, on one level, on the design of artifacts rather than the use of artifacts and tools, commonly found in other socio-cultural theories of learning (Warschauer, 2006) and yet, on another level, it focuses on the bi-directional relationship between an individual and a community of learners. Design takes on a particularly important role in forging this relationship as it embodies both creative and reflective practice (Schön, 1983; Rose, 2004), alongside a critical component.

Constructionist theory allows us to situate creative production as an alternative or an additional way for youth to critically understand and know new media. The creative artifacts can then be used in the classroom for encouraging a critical discussion of new media and the transparency concerns of software interfaces through which we hope that youth will learn about, question, and rewrite power structures found in dominant texts. Although the classroom may be more well-suited for stimulating these types of discussions, informal learning environments offer promising opportunities for how youths’ media culture and practices can be used to support expanded views of literacy, learning and expression, which are more open to new technologies, respond to new media, and extend the typical classroom. The texts that the youth in this study have created can be seen to counter dominant discourses about urban youth. Media educators can therefore use creative production to document learning and participation, and ascertain if youth have a critical understanding of today’s new media culture. This approach is similar that of arts educators, which view the artwork produced as an important data source for determining what students have learned about reading and writing images (Gardner, 1980; Eisner, 2002; Cowan, 2004; Kress, 1996).

Digital media creations by and for urban youth

While schools have long served as the central station for media education, we suggest turning attention to out-of-school places, such as computer clubs, community or after school centers, where youth, on their own volition, engage in the practice of creative production. Informal, out-of-school spaces (such as the

Computer Clubhouse) offer an exciting opportunity to explore how youth already make use of new media as tools for communication and expression, particularly by capitalizing on software that allows designers to use computation or computer programming. We developed Scratch, a programming environment with the ability to import and manipulate various media files that could be integrated with existing creative software. Scratch differs from other novice visual programming environments in that it utilizes a user-friendly building block command structure, eliminating debugging processes and the risk of syntax errors (Resnick, Kafai & Maeda, 2003; Maloney et al., 2004). Figure 1 is a screen shot of the Scratch user interface. The left most portion of the screen lists the palette of available commands. The middle panel lists the commands that the user has chosen to control the objects, or sprites, listed in the bottom right panel. The top right panel is the design screen. Through our observations, we found that youth already have an interest in videogames, music videos, cartoon animations, and interactive, design-based art, which is a natural springboard into creating and programming using Scratch. Scratch, as compared to the more animated “clip-art” approach of SuperGoo, allows the user to manipulate and create interfaces. Youth can emulate SuperGoo by creating an interface to animate and distort pictures but, at the same time, can create many other types of interfaces such as videogames, music videos, animations, and other types of digital art.

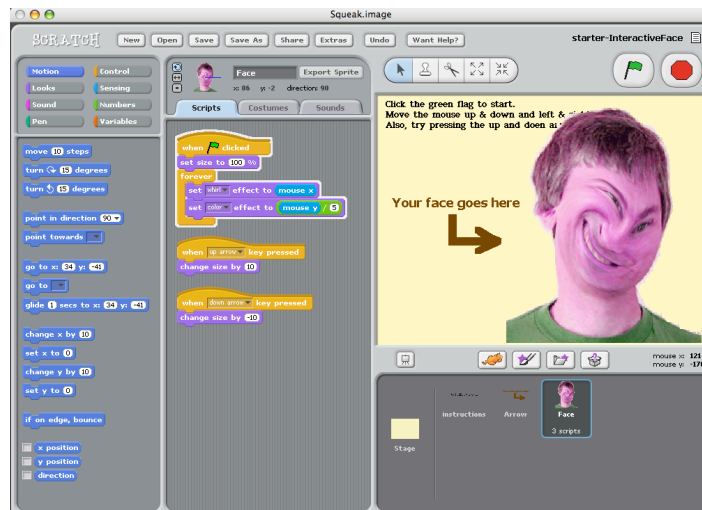


Fig. 1. Screenshot of the *Scratch* user interface emulating *SuperGoo*.

For our case studies, we draw upon ongoing ethnographic observations at a Computer Clubhouse in South Central Los Angeles, which is situated at a storefront location in one of the city's poorest areas. This particular Clubhouse services over 1,000 high poverty African-American and Latino youth who range from 8-18 years of age. At this site, we are investigating how urban youths' informal media culture and practices can be used to support alternative pathways toward new media literacies. We use three vignettes to illustrate the core ideas of what digital media literacy should be and how we can analyze the creative product itself as evidence that youth are learning some of the principal ideas of new media education. Here we concentrate on work done in Scratch, although it is just one computational tool among potentially many others that has enough flexibility for convergence, participatory cultures, and media mixing. The vignettes illustrate how a constructionist tool and context for creative media production encourages reflection within the production process. Each case features a different pathway from which youth forge projects that are unique and personally meaningful. Each of these personal anchor points provides a separate context that aligns with articulated goals important for media literacy.

Jorge: Metal Slug Hell Zone X

In our first example, we draw from a videogame called "Metal Slug Hell Zone X," created by a 15-year-old Latino male software designer named Jorge,¹ who modeled the piece after a popular videogame with a similar title. The original Metal Slug is a futuristic "run and gun videogame" widely known for its sense of humor, extremely fluid hand-drawn animation, and fast-paced, two-player action. At home, Jorge has a passion for video gaming, and spends the majority of his time at the Clubhouse working on Scratch projects. Metal Slug Hell Zone X is his second project. When the viewer presses a start button, a title screen prompts the player to choose one of four avatars. The selected avatar then appears on the screen, behind which lies a barren purple desert landscape with moving clouds overhead. Players use the arrow keys to move forward, backward, crouch, jump, and fire a gun (see Figure 2).

Jorge used a full range of design software to make his project. Using the paint editor within Scratch, Jorge paid meticulous attention to realistically animating the avatar as it moved. He made sketches based on playing the original videogame, downloaded sample avatars from Internet fan sites, and refined each frame of the movement in the paint editor for smooth stop-action animation. Utilizing the visual programming capabilities of Scratch, Jorge programmed

these images to respond to keystrokes so that the avatar walks effortlessly across the screen or jumps when prompted by control keys. Jorge has used design conventions, such as programming the character to respond to each of the arrow keys, and creates special responses if the avatar is told to do something (such as shoot) while crouching or jumping.

Jorge’s video game production provides insight into how the goals of media education apply to gaming. In this project, Jorge has learned about game design through imitation and as Buckingham points out, “imitation is an indispensable aspect of learning” in media education (2003, p. 134). He has learned how to design for interactive play and has redesigned his program several times, discovering that it can be friendlier to the user to design a game that responds to standard key strokes (e.g., right and left arrow keys) rather than random characters on the keyboard. Jorge has also learned how to participate in the distributed online culture specific to designing and making fan videogames. Scratch has facilitated his understanding of how games are made by professional production specialists and he has also networked with other fans, like himself, that are wanting to create amateur productions. He has gained an appreciation for what’s difficult and easy to design in video gaming, and in the process, he more actively participates in the gaming community, checking occasionally online to see what others have created and asking others to play his game to gain feedback.



Figure 2: The screen in the middle is an example of a “videogame” called “Metal Slug Hell Zone X” created by Jorge. Above is a screenshot of an avatar while the game is in play mode. Pictured on the left above is a partial screen shot of the costumes area, illustrating a short sequence of still frames used to animate a shooting sequence. Pictured on the right is a partial screen shot of the scripts area that control one of the avatars.

Beyond Jorge's attention to interface conventions, he has explored, and in some senses reformulated, genre conventions of shooter games. The title denotes that his work is in the same series as other Metal Slug games (e.g., Metal Slug 2, Metal Slug X, and Metal Slug Advance) yet, there seems to be a parodic edge to the title (Hell Zone X) because, while he has conformed to most of the trademarks of the series, Jorge's recreation has an almost Zen-like impact on the viewer/player. Jorge's game lacks the loud music and sound effects of the original, and with animated clouds floating overhead and the rolling terrain beneath, the resounding quality of this game is one of tranquility and solitude. Jorge has created no antagonists to shoot, no violence, no blood, and no chaos that we might otherwise expect in the "Hell Zone," and instead has focused on creating smoothly animated protagonist and a space for this character to dwell. This seems to be a play on the genre itself (simultaneously a violation and a creative act). Jorge tells us that one of the reasons for coming to the Clubhouse includes the sense of focus and calm that he gets when he works on his projects. In this sense, the game serves as a metaphor for Jorge's everyday experiences and encapsulates the sense of relief that Jorge feels at the Clubhouse when he's engaged in his work.

Kaylee: k2b

Our second example comes from a 12-year-old African-American girl, called Kaylee, an avid consumer of pop, R&B music and music videos. Frequent activities at the Clubhouse include looking up song lyrics online, singing, and downloading images of her favorite stars. For her first Scratch project, Kaylee created a music video based on Gwen Stefani's "Hollaback Girl" (2005). The song responds to a disparaging remark by fellow musician likening Stefani to a popularity-obsessed high school cheerleader. Stefani's track is set in an imaginary high school and relays the message that insults are not things that she tolerates. In the refrain, Stefani asserts that she "ain't no Hollaback Girl," referencing backup members of a cheerleading squad whose job it is to holler back the calls of the head cheerleader. A possible interpretation of Stefani's meaning is that she is choosing not to return insults with words but rather responds by stepping it up with an inventive comeback (Wood, 2005).

K2b's likeness to the original video reveals how closely Kaylee studied this text. Once a user presses the start button, the "Hollaback Girl" track begins and twelve predominantly female avatars dance on screen. Like Stefani's video, these characters are dressed in a variety of costumes and are programmed to

perform dance steps often imitating the choreography of the original. The k2b video also alternates between urban, school-themed backdrops. Toward the end of Stefani’s version, cheerleaders hold up cue cards that spell “B-A-N-A-N-A-S.” At the same point in the song in k2b, Kaylee programs blue and yellow letters, spelling B-A-N-A-N-A-S, to flash and spin on screen.

The elements that Kaylee chose to alter from the original illuminate how she is critically reflecting on the music video. For instance, while Kaylee has chosen a school setting in k2b similar to that in Stefani’s video, she has in fact inserted pictures of her own school in Los Angeles, in addition to urban settings that remind her of her neighborhood (even employing a hand-drawn aerial view of her path between school and the Computer Clubhouse.) While the blue and yellow color palette of her work reminds one of the colors featured in Stefani’s video, a backdrop of a UCLA tennis court leads one to suspect that Kaylee has chosen these colors as they are UCLA’s school colors, the University that Kaylee hopes to attend. Perhaps most conspicuously, images of Gwen Stefani are nowhere to be found. Kaylee was adamant that she didn’t want a picture of Stefani, rather she wanted a picture of herself and one of her little brother. In the search for these images, Kaylee was very particular about the “look” that she was trying to achieve; her knowledge of pop culture made her very discriminating about the images that she chose, rejecting images of herself in her church clothes because it wouldn’t be appropriate for a music video.

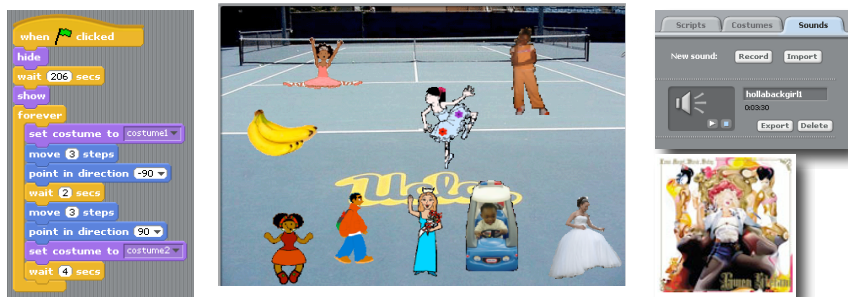


Figure 3: This is an example of a “dance video” called “k2b,” created by a thirteen-year-old female software designer (Kaylee), who modeled the piece after a Gwen Stefani music video called “Hollaback Girl”.

What does it mean for a 12-year-old girl to insert herself as the lead singer of this song and why would she want to do this? Because of Kaylee’s

frequent activity of downloading and studying the lyrics of her favorite songs, one can deduce that she chose “Hollaback Girl” for her video not because she merely liked how it sounded, but because the message of the song was one that she found particularly relevant to her life. Based on discussions with Kaylee about her experiences, this song resonated with her in the way that she navigates—and feels others should navigate—middle school, where oftentimes fights break out over petty insults. Furthermore, by placing elements in the video that highlight her life, her school, and her family, we see the value that she places in her upbringing. Kaylee’s particularity regarding the ways that k2b should look like a “real” video demonstrate that the elite world of Kaylee’s pop idols are not so superior that images of her family and her environs.

Kaylee’s piece exemplifies what Mimi Ito describes as “media mixes.” The production of k2b moved organically from one medium to the next, from the initial inspiration of the MTV music video, to downloading the song from the Internet, to animating images in Scratch, to the incorporation of personal digital photos (see Figure 3). Through this type of media mixing, Kaylee learned about a variety of media and programming, drawing upon a skill set not commonly developed among youth in her community. Kaylee is also cognizant of the different genres from which she is borrowing, and sees this work as programming, as a music video, as a cartoon animation, and as a choreographed dance. In this way, she became a participant in the music video culture without the use of handheld video cameras and editing equipment, which are still expensive and difficult to come by in urban areas. Furthermore, Kaylee becomes a participant in a larger design culture by posting her work for others to view online. On the Village, an intranet for the Computer Clubhouse network, her project has received over 600 hits from members around the world, a sign that she’s created a Scratch project that has stimulated a lot of interest.

Dwight: The ‘Low Ridas’ culture

Within urban youth cultures there is a lot of interest in customizing cars. Television shows, like MTV’s *Pimp My Ride*, have popularized this trend within mainstream American culture. Historically in the Clubhouse, a popular activity was to manipulate digital pictures of expensive cars, inserting a picture of yourself next to “your” ride. Made popular by a young bi-racial African-American and Latino youth named Dwight, a culture of “Low Rida” interactive art projects has emerged. A Low Rida (or lowrider) is a genre of customized car

associated principally with the Mexican American community (see Cowan 2004 for a fuller account of its emergence amongst migrant workers during World War II). Lowrider art is now a popular art form where youth draw or depict lowriders and is featured in magazines, like *Lowrider* magazine, along with pictures of customized cars, political reports, and advertisements for parts and accessories. In one of Dwight's first projects, "Low Low," the viewer controls the hydraulics on two cars using arrow and letter keys. According to Dwight, the essential parts to his "Low Rida" project are the cars, the urban background, the graffiti-like lettering, and the speakers (see Figure 4).

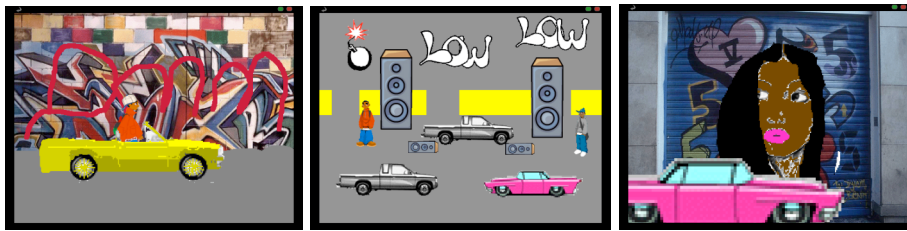


Figure 4: Screenshots of Dwights' "Low Low Rida" project in the middle and two other "Low Rida" *Scratch* projects, created by other members of the Clubhouse. On the left, Dwight's brother customized his ride by painting it gold and drawing in gold hubcaps.

Dwight's work is another prime example of Ito's media mixes. Low Ridas can be seen as a new genre of work (perhaps a mix of other genres, ideas, and dominant and countercultural values) that is a "form of visual and cultural literacy that is clear and comprehensible to members of a particular discourse community who have been socialized into it" (Cowan, 2004, p. 49). Several new Low Rida projects emerged over a period of eight months based on Dwight's earlier work, resulting in a widespread use of Scratch by first-time users (see Figure 4). By participating in the Low Rida movement, youth gain access to skills, empowering them to become designers of digital media. This is an important aspect of participation in an informal learning culture where contribution is valued. As a result, when youth were asked to describe what types of projects they could create in Scratch, most youth listed "Lows Ridas" in addition to games, animations, and stories as a distinct type of genre. Low Ridas represent a mix of genres (perhaps of videogames, lowrider cars, and cartoons) that is interactive (by requiring the viewer to operate the hydraulics in most cases, similar to games or web-based art), performative (as showcasing your Low Rida project within the community is particularly important), and artistic (as each

member strives to customize their project). Dwight's contribution to the Clubhouse was to expand the genres of work in Scratch and incorporate new genres that are inclusive of his social practices. This resonated with others in the Clubhouse community, eventually drawing in several first time users of Scratch who may have not otherwise engaged in this type of creative production. Low Ridas represent a conscientious and literate practice that stands in opposition to the pressure to assimilate into the American mainstream culture. As media educators plan to include a wider variety of genres in media education, it becomes important to question whose genres are being included and excluded in the curriculum. Rather than deciding on this *a priori*, creative production provides an exciting opportunity for youth to share out-of-school literacy practices with media educators so that these practices can be leveraged to meet the larger goals of media education.

Discussion

New genres and trends in media mixes, convergences, and forms of participation necessitate new approaches to media literacy. Creative production can address these changes, moving media education beyond the traditional "platform approach" toward an updated understanding of how media are produced and consumed. As illustrated above, multiple aspects of creative production in informal settings empower youth as critical designers in a venue where their contributions are valued. The Computer Clubhouse provides an informal setting in the sense that there are no structured activities, the youth dominate the space, and without any formal instruction, youth have learned about aspects of new media and have written themselves into the dominant culture as a participant. The vignettes suggest there are several affordances of out-of-school settings for media education work of this kind. One of the benefits of informal learning spaces is that youth can explore their interests in a lengthy, uninterrupted span of time. If Scratch were adapted in the classroom setting, however, youth would be given the opportunity to reflect on these practices, and the larger media culture, more systematically. For example, writing about and reflecting on the work being produced is not commonplace in informal settings, and it perhaps would be more amenable to the practices in a typical classroom. Additionally, a teacher could explore other topics, such as the analysis of media texts, and could help youth verbally articulate their visual discourses.

Leading researchers have criticized the Clubhouse network for not doing enough to meet the goals of media education because of their prominent focus on

creative production (Jenkins *et al*, 2006d). However, we argue that, through production, youth are increasing their understanding of media, becoming more critical and discriminating participants, comprehending which aspects of media are malleable, and how interface design changes the user experience. Additionally, the vignettes illustrate how designers develop an understanding of how genres are products of social and cultural construction, and result from choices made during the creative process (Hyland, 2002).

In choosing software for creative production, media educators could benefit from reflections by designers of construction kits for kids, which utilize creative technologies that allow for “low floors and wide walls,” ones that support “many paths and many styles,” and allow users to “invent things that you would want to use yourself” (Resnick & Silverman, 2005). Scratch represents many intentional choices, personal, social, pedagogical, and cultural. It reinforces the underpinnings of constructionism: that learning experiences are most engaging when people are designing and creating—an important message for media educators.

We have formulated a cursory list of advantages for creative production that spans the SuperGoo to Scratch continuum. First, it increases flexibility and fluency when moving across platforms, as in Jorge’s case, where he draws upon multiple sources of material and several different software applications to create his game. Youth that may not otherwise be involved in computer programming or a formal media education curriculum are now being drawn into the participatory culture through creative production. Ultimately, we hope that this has some impact on larger issues of access and participation. Secondly, Jorge’s case illustrates how creative production encourages learning about and questioning traditional software design conventions and new media genres, like video games, and represents a mix of genres, ideas, and values. Third, creative production provides opportunities for personal expression, creativity, and the appropriation of new media as evidenced in all three of our vignettes. Manipulating new media allows youth to connect to their prior knowledge and personal interests. In this study, youth drew upon their knowledge of pop culture, video gaming, and lowriders. Finally, creative production enables critical reflection on media culture, expressed through visual instead of oral or written discourse. All three of our vignettes have extended and reflected on their knowledge of culturally meaningful texts and dominant discourses and formulated a response through their work.

Our use of media-rich design is not a radical departure from prior approaches in media education; rather we view it as complementary, expanding existing media literacy approaches that have previously focused on critical

reflection and understanding, to be more grounded in youths' creative practices. Creative media production in the digital age follows the functional, political, and personal dimensions ascribed previously to traditional literacy (Scribner & Cole, 1981). In theory, all media education should be concerned with providing access to the digital equivalents of functional literacies of reading and writing. Previous discussions have cast this issue mostly in terms of access to digital equipment (the digital divide) instead of the participation gap, the transparency problem, and the ethics challenge (Jenkins, 2006c). Here our work gathers particular relevance in light of the inequitable access and participation of minority youth in digital technologies. Both the functional and political aspects of literacy involve personal expression, as illustrated in the previous examples. In the digital age, media education needs to foster both critical understanding and creative production of new media to encourage urban youth to be consumers, designers and inventors of new technologies.

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Notes

1. Participant names in this study are pseudonyms.

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