ScratchR: a platform for sharing user-generated programmable media

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ABSTRACT
In this paper, I describe a youth-friendly platform for sharing *programmable media* on the web called ScratchR. ScratchR tries to be the backbone of an on-line community that will serve as an audience and as a source of inspirational ideas for participants. The platform seeks to support different states of participation: from passive consumption to active creation. ScratchR is being evaluated with middle-school children as part of an 11-week workshop.

Keywords
programmable media, user-generated content, social networks, creative, on-line communities

INTRODUCTION
ScratchR is a youth-friendly platform that lets users their own *programmable media*. Scratch is a new programming language that makes it easy for children to create *programmable media* such as animated stories, games and interactive art. ScratchR will be the on-line community for Scratch programmers around the world. The main goal of ScratchR is to support the different states of participation: from passive consumption to active production, while trying to foster the latter. ScratchR will achieve this goal by being a source of inspiration for new ideas, a repository of appropriable objects and a place where people can find a socially connected audience for their creations. The immediate result of this work is the creation and public release of ScratchR as an important element of the Scratch experience. The platform is being evaluated with a group of middle-school students participating in an 11-week Scratch workshop. The result of this research also provides a theoretical framework for analyzing and designing on-line communities that for user-generated content.

SCRATCH AND PROGRAMMABLE MEDIA
In the context of this project it is important to define *programmable media*. I will start by giving examples of what is not programmable media. Things such as videos, audio, images and text are not programmable media. Programmable media is when images, audio and text, are controlled according to certain behavior. In Scratch, the behavior is programmed by the user. For example, a kid can use the image of a cat (non-*programmable media*) and then define a behavior like "move the cat 10 steps when the right arrow key of the computer is pressed". That combination of user-defined behavior and media is what I call programmable media.

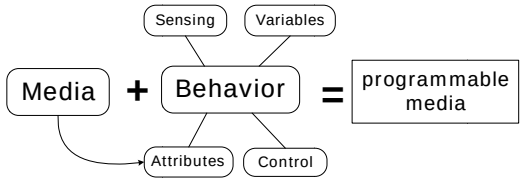


Figure 1. Elements of a programmable media object.

Scratch [1] is a visual authoring environment for creating *programmable media*. Scratch was developed by the Lifelong Kindergarten Group at the MIT Media Laboratory for youth, ages 8 and up. The Scratch software focuses on simplicity and brings powerful ideas to the hands of everyone. The Scratch application lets users drag programming blocks into a script area to manipulate sprites and sounds that are then played in the stage area.

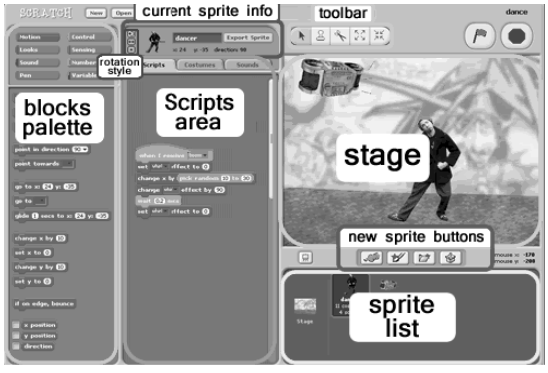


Figure 2. Scratch screen.

RELATED WORK
Platforms for sharing user-generated content are not new; in fact they are part of a recent trend of web sites that have gained a lot of attention in recent years. For example, sites like YouTube [2] and Flickr [3] are well-known platforms for sharing non-*programmable media*: videos and pictures respectively. In these sites, users find inspirational ideas by looking at other people's creations (i.e. pictures). Also, users see the community as an audience for their creations,

an audience that often provides feedback. However, there are is not a platform for sharing programmable media and especially none one that addresses children. In addition, due to the nature of programmable media, it is possible to go a step beyond the typical media-sharing experience: *creative appropriation*.

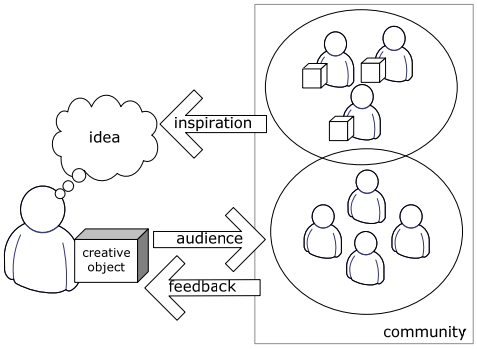


Figure 3. Typical media-sharing platforms

I call *creative appropriation* to the utilization of someone else's object in the creation of a new object. There are very few examples of platforms that allow for *creative appropriation*, one of them is OPENSTUDIO [4] and another is JumpCut [5]. In OPENSTUDIO users are able to manipulate the source images to create a new one. In JumpCut users cannot see the source of the video, but they can use a video and remix it with other pieces of media to create a new video.

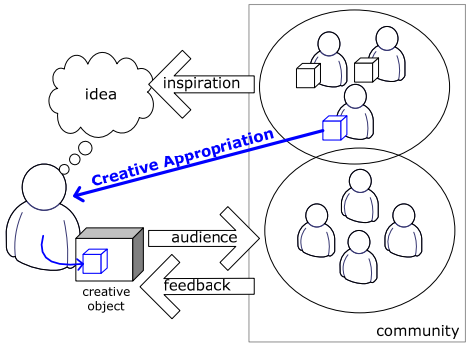


Figure 4. Platform that fosters creative appropriation

DESIGN GUIDELINES

While the usability guidelines of ScratchR are very important, other researchers have done relevant work in this area [6]. The guidelines presented here are more at the philosophical level. While ideally every member of the community should be an active producer, the nature of the creative activities is that the level of involvement varies from person to person and from time to time in each individual. ScratchR designed to be a welcoming environment for users no matter in which role-state they are. For passive consumers, lowering the floor is important, that is, making the browsing and interaction with other people's project as easy as possible. For active members of the community, be it active consumers or active producers, the social connectivity and the feeling of being in control of their own community are important characteristics. In ScratchR, users engage in three types of activities:

1. Inspiration. By looking at other Scratch projects, users are inspired to create their own projects perhaps using some of the ideas as seeds for their own ideas.

2. Creative appropriation. By downloading and tinkering with other people's projects, users learn by example and can reutilize some of the code, sprites and audio for their own projects.

3. Feedback from and to a community. Users get comments that encourage and discourage certain types of behavior in the community. The community serves as an audience to address the matter of pride of ownership important in the learning process as well as pride of expertise as shown by senior members of the community.

The goal of ScratchR is to foster the transition from passive consumption to active production. Inspired by Jenkins' [7] description of the states of participation in fan-fiction communities, I put forward the idea that members of creative communities tend to move in four different roles or states of participation: passive consumption, active consumption, passive production and active production. These roles/states are the core of most user-generated sites and ScratchR addresses them in a relevant way for the specific audience and type of objects:

1. Passive consumer. This is the traditional broadcasting model where people's interaction stays in the realm of switching channels or browsing. In this state, people assess the community to understand their values and ideas. While this is the most passive state, the passive consumer alters the system just by viewing because the number of views is counted and presented publicly. This feature in itself is a way of participation in the community, albeit small, but more than what off-line sharing typically offers.
2. Active consumer. This is where people participate in the community by providing metadata. In the case of ScratchR, it is where people contribute their ideas by: commenting, tagging and rating projects
3. Passive producer. In this state, users create projects, sometimes inspired by other projects they have seen in the community, but do not necessarily feel compelled or ready to share them to the community.
4. Active producer. This is highest state of participation. The user not only consumes but also contributes to the repository of projects. Most likely this person gives feedback to other people's projects, gets inspired by others and also provides inspiration to others. The level of involvement in the community is recognized by others, this person feels invested in the community and it is the most important asset in ScratchR. This member should

be considered as an important part of the development process.

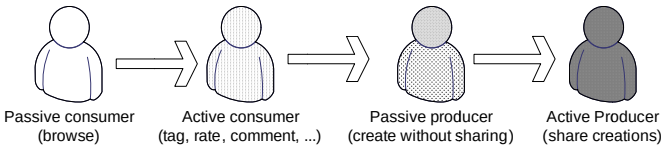
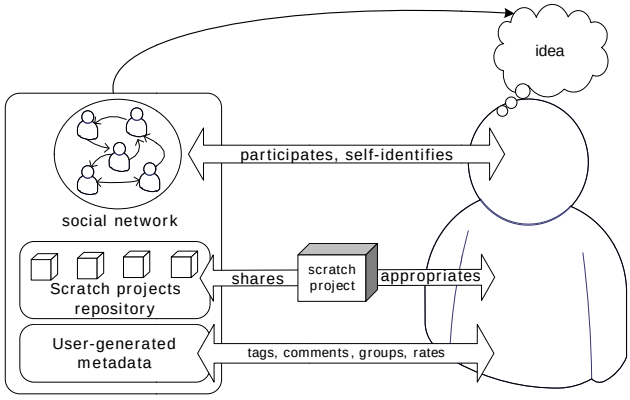


Figure5. States of participation in ScratchR.

ARCHITECTURE

ScratchR is composed of three basic elements: a repository of Scratch projects, a library of user-generated metadata about those projects and a socially networked community. Members of the community can share (upload) or appropriate (download) Scratch projects to and from the repository. They can also participate in the community by tagging, commenting, grouping and rating other people's projects. These activities occur in the context of a social network where members can connect with their friends. Non-members of the site can only browse the site on a read-only fashion.



Figurre 6 ScratchR components

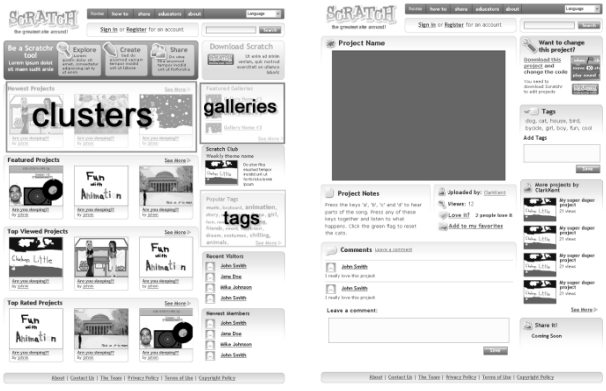


Figure 7. Screenshot of home page and project page

EVALUATION

I will observe and documenting how a group of ten middle-school students use ScratchR as part of an eleven-week workshop. I will work with the participants for about two hours every week. The focus will be to engage participants in the creation of programmable media for the web as an instrument for self-expression. I will present Scratch as the tool to build such type of media and Scratchr as the place for them to share, get inspired and get feedback. I will capitalize on the popularity of existing social networking by presenting ways of sharing their creations in sites like MySpace [8].

I expect to collect information that will help me build illustrative cases with mostly qualitative and some quantitative data that will give a good idea of the patterns of participation. The type of data that I will collect is:

- description of changes in participant's engagement that occurred during the workshop
- sample projects and the way they were influenced or influenced the community
- duration and frequency of certain type of behavior
- ratings of experiences as expressed or manifested by participants
- description of moments
- quotes from participants
- metrics of usage of different features the site such as uploads, downloads, comments and tagging.

The observations will be organized in four categories: inspiration, publication, community and infrastructure. Some examples of the questions that will guide the evaluation are:

1. Inspiration: Do they download projects and re-use them? Do they re-use sprites images, code, both? Do they give or care about giving credit to the original creator?
2. Publication: Do they see the site as a place to get an audience for their projects, as a storage place or both? Do they send their projects on-line to people outside the workshop? Do they upload multiple versions of their projects on-line?
3. Community: Are participants engaged in the on-line community? At what level? Do they browse, comment, tag, and upload? How does the community influence their creation process? Do they pay attention to other people's comments to their own projects? How their interactions face to face differ from their on-line interactions?
4. Infrastructure: Where does the Scratchr platform fail in letting users accomplish their goals? What features are under-utilized? What features do users seem to need or openly ask for? What are features of the platform geared towards programmable media differ from those focused on other type of media (i.e. video, pictures, et cetera)?

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REFERENCES

1. Maloney, J. et al (2004) "Scratch: A Sneak Preview". Second International Conference on Creating, Connecting, and Collaborating through Computing, Kyoto, Japan, pp. 104-109..
2. YouTube at http://www.youtube.com.
3. Flickr at http://www.flickr.com
4. OPENSTUDIO at http://openstudio.media.mit.edu.
5. JumpCut at http://www.jumpcut.com
6. Nielsen Norman Group Report. *Usability of Websites for Children: 70 design guidelines based on usability studies with kids*.
7. Jenkins, H (2006). "Convergence Culture". New York: NYU Press. p 176
8. MySpace at http://www.myspace.com.