Aago for Mobile Media Narratives Created by Teens: Lessons from Co-Design, Prototyping and Evaluation

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ABSTRACT
In this paper, we describe the process of cooperatively designing, prototyping and evaluating Aago, a mobile tool for creating and sharing media narratives among teenagers engaged in community-based participatory media programs. Aago supports capture, annotation and sharing of audio-visual media as story threads through a simplified mobile interface. Pilot user evaluations demonstrate the challenges and potential for individual and cooperative media making in several learning and design contexts.

Keywords
Mobile media narratives, digital storytelling, co-design, teenagers

INTRODUCTION
Mobile media technologies offer a potential for young users to capture, construct and share expressive narratives in the context of their everyday experiences. Teenagers today are increasingly using mobile devices for accessing the Internet, participating in social networks, and consuming media content. While mobile devices including smart phones and iPods readily provide a means to capture rich media content, few applications allow ease of creating and structuring media into narratives that can be developed individually or collaboratively by children and youth.

Mobile Stories supported collaborative reading and creation of mixed-media stories, using pre-authored content and templates (“story starters”) that users could extend to create shared narratives of their experiences in visits to outdoor historic sites [1]. M-Generations experimented with creation of informal video stories using mobile phones with Kenyan immigrant youth and their parents to bridge a perceived cultural divide [2]. A process of cooperative inquiry [3] with young participants in a summer youth program participants and Press Pass TV, a youth media organization in Boston. In this paper we will describe the design process and rationale, user experience and lessons learned from the pilot evaluations of the initial Aago prototypes. We expect that emerging insights and lessons learned may guide the design and development of more comprehensive open source software and web-based platforms to support mobile and collaborative narrative media making among youth.

AAGO: CO-DESIGN AND PROTOTYPING
The word “Aago” is derived from the Spanish word “Hago”, which means, “I do” or “I make”, in the spirit of the DIY (do it yourself) media making culture among youth, a key motivation for the project. Aago was primarily intended to support two main usage scenarios among youth: 1) capturing the process of making DIY projects in the context of design studios, allowing users to narrate the rationale, and 2) citizen journalism and collective storytelling in the context of an urban youth media program. We aspired to devise a rich media application that could be used easily on a mobile device to support both these user scenarios.

Aago needed to provide users a rapid means of capturing, aggregating and reviewing their own design process or narratives, while facilitating social forms of making, expressing and learning. The essential media content to be captured included images, audio and video with textual annotations to represent an unfolding product design process or an emerging citizen media story constructed by youth. The application would then allow users to organize and narrate the raw content into collectively curated threads for publishing online in the future. As Figure 1 shows, Aago would allow users to organize raw media content captured into one or more story threads to collectively improve the representation and publication of the content into narratives.

Figure 1: Combining raw content into curated story threads
The Aago design team consisted of 3-4 students who conducted observations in studio design courses at MIT while creating mockups and rapid prototyping of various user interface (UI) designs. The limitations of a mobile device with a small screen size and on-the-go usage needed to be taken into account to create a simple yet powerful software tool to support the user scenarios envisioned. Observation work conducted in an MIT design studio allowed the team to represent the emerging physical and online design process and social interaction among participants in the form of storyboards (see Figure 2). The studio-based class required narrative/visual updates on individual student projects on the course blog. The blog posts were frequently examined to draw out patterns of representation and usage in the production process.

Figure 2: Capturing a user’s design process through storyboards

Close observation in a contextual setting allowed the team to narrow down and specify certain tasks that were more vital to the application’s functions. We learned that the production process often involved broad research stemming from personal interests. Students were eager to make posts and start discussions about content that reflected their design tastes. These forms of raw content often exhibited little direct connection to the resulting product outcomes, yet remained important as informal ideation. The team realized the importance of curatorial assistance that would not only help the designer to effectively organize her thoughts but also improve the narrative of the published content.

The team identified rapid note-taking, media capture and tagging information as Aago’s core functions. Rapid note-taking is necessary for productive brainstorming and follows the natural pattern of how media makers at the early stage of a production project generate conceptual ideas. Researchers at Fuji-Xerox previously developed tools to support tagging of recorded audio/video using hand gestures to enhance search and detection of associations with captured content using an electronic tablet [4]. Marking or tagging can help users group and consolidate a range of implicit design rationale within rapidly collected or captured digital media content, which may be dynamically reorganized. Tagging information thus creates a bridge between content generated during informal brainstorming sessions to the actual production process that conveys an emerging narrative about the designer’s intention and making of the product.

The team drew on previous experience organizing participatory media programs with immigrant and marginalized youth from inner-city areas and refugee camps [2][5]. These programs were designed to support digital storytelling through storyboarding, photography, and video using handheld and mobile devices. In these contexts media capture was easier, however editing and producing completed media narratives was often far more time-consuming and complex for participating youth. Hence, a simple tool that allowed such media narratives to be easily sequenced and narrated on the mobile-device itself was desirable, with an ability to collectively produce and disseminate extended media narratives through an online platform.

With these design goals worked out, the team proceeded to develop several mobile user interfaces to support such tasks. An overall design metaphor that emerged through collective brainstorming was that of a “daily diary” with a chronological ordering of media captured over time. All captured media entities would be shown sequentially, scrolling vertically down the screen, while allowing users to tag and annotate content as needed (see Figure 3). Extraneous media captured could be hidden from view.

Figure 3: Sketches of the initial user interface as a daily diary

Other features included searching content, creating project folders, marking content as favorites, adding friends who can see the content in a particular project, and being able to browse media threads created by others. These UI sketches where then translated to low-fidelity prototypes as paper-based mockups (using a software tool called Balsamiq). The mockups allowed the designers to visualize tasks illustrated through a logical sequence of screen-based interactions (see Figure 4) and begin user testing.

Figure 4: Paper-based user interface mockups for a selected task

In this early stage of the prototyping, the paper-based mockups allowed the team to gain user feedback and conduct usability testing without software development. Several students from Wellesley College were informally recruited to participate. Three user scenarios were constructed and tasks written out for them to perform, while designers observed and sketched out revised UI alternatives together with users during the process (see Figure 5).

Figure 5: User testing and co-design using paper-based mockups

The user pool included students both familiar and unfamiliar with the Apple’s mobile iOS platforms. Those with little experience with such devices took more time to finish the three tasks assigned. They frequently asked about the functions of the standard buttons and were more hesitant to continue on their own.

Overall, the user testing was quite successful, and the participants were open to making suggestions and sharing some of the difficulties they encountered. Several tasks requiring a two-step process (e.g., editing items) were flagged as confusing and unnecessary by users in their interactions with the paper mockups. Some users suggested setting up prompts for feedback. Another noticeable problem was with the obscure hierarchy of folders and application panes. Observations and comments from the first user testing provided helpful suggestions for improvement. The subsequent designs were photo-realistic mockups that offered various ways of laying out media content as visual tiles. The design focused on individual activity and excluded functions for sharing, publishing, and social networking (which would be extended in the web-based platform). The visual design was improved with a limited color palette while the look of the user interface was designed to be clean, simple, and appealing to teens (see Figure 6). The text space was minimized and more attention given to large images, which makes for a more appealing layout and an efficient use of the limited space on mobile screens.

Figure 6: Screenshots from the Aago prototype running on iPods

The first working prototypes of Aago were developed on the iOS platform (using Xcode), integrating media capture tools, and maintaining a database of all user-generated content for export to a web-based platform in the future. It was initially programmed for Apple iPods, though it was expected that the open source code would be ported to the Android platform in the future to make it more widely accessible. A secure password-based login allowed users to distinctly or privately capture individual content, even if the device was shared with others. The prototype included a “home” button to view all media captured in a “daily diary” format shown chronologically and tag the content with user-generated keywords. The “add” button allowed users to capture an image, video or audio segment, which may be tagged to particular activities for browsing quickly. The media could then be weaved into non-linear narratives through the “story” function, which produced a curated slideshow with the option to narrate a voice-over. All stories were listed with thumbnails of media content shown as filmstrips, and could be browsed or played individually. Finally, a “publish” function would eventually allow selected stories to be exported for sharing online. The web-based platform was conceptualized to allow collaborative sharing, editing and publication of media stories among a team of users (see Figure 7).

Figure 7: Early designs for the Aago web-based platform: The “Captured” page allows users to view their own media content, edit or create stories, and publish them to the “Shared” page.

The Aago web-based platform design resembles many existing social networking sites where users may maintain a personal “Captured” page and a more public “Shared” page for updates. On the “Shared” page, users could discuss and create collectively authored stories for publication if needed. The initial design prioritized security and transparency for users and a privacy setting where only designated friends may see the user’s own media stories. The overall UI design focused on simplicity as well as rapid creation, co-curation and publication of shared narratives.

PILOT USER EVALUATIONS

Upon completion of a working prototype, the design team embarked on user evaluations conducted in the context of three different youth media programs in Boston in summer 2011. The first pilot evaluation was conducted with the Computer Clubhouse at the Museum of Science. The team worked with the four high school interns as part of the “World Builders” program which invited youth from local communities to simulate a unique island using various building and technology tools; the interns were responsible for facilitating, organizing, and documenting the process. After consulting with the program manager, the team concluded that the Aago application would seamlessly substitute their documentation notebook. The interns rapidly captured daily or weekly progress on their islands using the tool and had it ready for online publishing. During preliminary UI testing (see Figure 8) users suggested improved voice-over features and noted performance issues, which were refined in later versions provided.

Figure 8: Participants testing Aago at the Museum of Science
The second stage of testing, scheduled at the end of the “World Builders” project, was designed with greater consideration for contextual usage. Each participant was encouraged to create a completed media narrative as an audio-visual report about his or her island. They were informed about the latest features of the Aago application, especially a new slideshow or “story” function with the voice-over and limited their presentations to under a minute. Having had prior experience with Aago, the users quickly began documenting their projects to generate a single story with a voice-over that curated their collection of captured media content.

During this phase users suggested many feature refinements including use of a pause button for recording longer voice-overs and better mixing or muting of audio levels of voice-overs if played over an existing media object. When there was more than one participant involved, the users would often resort to filming a video instead of going through the process of collecting content and later recording a voice-over. It was also noted that users should sometimes be given restrictions on the duration of their recordings or provided a gentle warning to encourage the creation of shorter media clips compiled into well-structured stories.

Another evaluation was conducted at Codman Square, a community group based in Dorchester, with their “Girls Talk” program, which helps young girls to develop leadership skills to lead discussions and create local community narratives. The girls quickly adapted to using Aago and apart from several interruptions caused by unexpected bugs, the three teams created a rough but sequenced story of their projects at the center. The girls mentioned how easily they understood the user interface and how Aago could also be used in different settings. For instance, a girl commented on how she could document and publish her own comic series through the Aago application. Though the study was conducted at a very early stage of development, observing users voluntarily seeking ways to apply Aago in their daily activities demonstrated good possibilities. Finally, meetings with staff at Press Pass TV suggested that Aago would be useful in replacing video cameras when filming media reports or interviews that require faster public dissemination or for rapid storyboarding of ideas for potential production projects being planned with youth.

CONCLUSIONS AND FUTURE WORK
Aago was conceptualized, developed and evaluated by and with young teenagers, undergraduate students at MIT, and several community-based partner organizations involved. The iterative process of co-design, prototyping and participatory user assessment was crucial to the success of the project. Ethnographic observation, sketching, paper mockups and UI prototyping not only streamlined the overall process, but also allowed the team to develop richer models of user interaction, simplified mobile interfaces and novel forms of constructing media narratives with voice-overs, as naturally expected by young media makers.

While the mobile interface remains simple and limited in what it may offer, a complementary web-based platform would allow collaborative features for discussion, sharing, story creation and publication of collectively produced media narratives. The current prototype software\(^2\) is available as open source code, though we believe it would need to be rewritten and tested for both iOS and Android platforms to create a more robust and widely usable mobile software application. While Aago served its purpose as a rapidly developed prototype, the cooperative design process and outcomes from engaging young users offers helpful insights for the design and development of future youth-centric mobile media applications co-designed with and used by teenagers themselves.

In the future, such tools may feature live-streaming media content [6] that is dynamically tagged, annotated and remixed by teams of young mobile users reporting on live events and news stories as a form of youth citizen journalism. Such tools and platforms can also serve to engage peer learning and participatory analysis of situations encountered by youth through a process of collective review, annotation and sense-making of audio-visual media captured [7]. Mobile media narratives can offer opportunities for creative expression, shared learning, reflection, and civic action in the everyday informal contexts that children and youth encounter.

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