Skins 1.0: A Curriculum for Designing Games with First Nations Youth

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ABSTRACT

Aboriginal Territories in Cyberspace (AbTeC) conducted the Skins workshop to explore a pedagogy that integrated North American Indigenous cultural frameworks into the design of video games and virtual environments. Skins provides instruction in digital design, art, animation, audio and programming within a context of Aboriginal stories and storytelling techniques. In the pilot workshop with Mohawk youth at the Kahnawake Survival School, students developed interactive environments based on traditional stories from their community in a process that required them to reflect on how they knew those stories, who had told them, and which stories were appropriate for such remediation. In the process, AbTeC found that the discussions about these stories in the context of the technical skills development provided substantial motivation for both further inquiry into the stories and greater participation in the skills development. This paper describes the curriculum and strategies of the Skins pilot workshop.

Categories and Subject Descriptors

A. General Literature [**GENERAL**]: Conference proceedings

General Terms

Design, Human Factors

Keywords

Game design, education, curriculum, workshops, youth, First Nations, Aboriginal, American Indian, Native American, Indigenous, storytelling, remediation

1. INTRODUCTION

Indigenous peoples' survival, recovery, development, and self-determination hinges on the preservation and revitalization of languages, social and spiritual practices, social relations, and arts [26]. Video games and virtual environments, with their unique combination of story, design, code, architecture, art, animation, and sound [15], provide a rich medium though which to explore different strategies for pursuing such preservation and revitalization. It has even been argued that the fluid, open, and networked characteristics of modern digital media make it particularly useful as a tool for Aboriginal storytelling, with Loretta Todd, Cree/Métis filmmaker and Director of the Aboriginal Media Arts Lab, suggesting "the experience of cyberspace offers the reversal of narrative as derived from storytelling, a return to oral tradition" [27]. Furthermore, due to the radical decrease in the costs of the means of production and distribution, video games and virtual worlds present Indigenous people with a powerful opportunity to widely (or narrowly) communicate stories in which we shape our own representation.

However, many challenges to successfully making these media 'our own' exist. Lameman (neé Dillon) has conducted extensive investigations into Indigenous representation in both game content and production teams. Her research has shown that, while North American Indigenous youth are known to be avid video game players [8], they rarely appear in commercial games, and when they do, they are misrepresented in aspects including culture, behaviour, and language [3, 4, 6, 7]. In 2006, the Association for American Indian Development (AAID) launched a boycott against *GUN*, in which the player character hunts Apaches. Although *Age of Empires III: The WarChiefs* (Fig. 1) treats American Indian/Alaska Natives positively as allies to European colonists, the game has been criticized for its revisionist approach to history [1] and its lack of incorporating Indigenous thinking in the gameplay [5]. For example, in *The WarChiefs*, players have to gather resources like wood, but are never given the ability to replenish resources by planting trees, which results in a map of demolished tree lines. Where North American Indigenous characters are playable, they are stereotyped, and where they are side-characters, they are targets of violence [4].

Figure 1. Icons for Character Units from *Age of Empires III*.

FuturePlay 2010, May 6-7, 2010, Vancouver, BC, Canada.

The game industry, like characters and gameplay, is geared towards the Caucasian male audience. Despite the wide range of opportunities in game and virtual worlds development teams, which are made up of designers, programmers, artists, animators, sound engineers, and others, there is a clear lack of diversity in employment. In the most recent survey by the International Game Developers Association, 83% of respondents stated they were "White" and 88% stated they were male [13]. American Indian/Alaska Native and First Nations representation was so minor—totaling only 41 respondents, most still in school—that statistics were not reported.

However, the game industry is experiencing an increase in independent game developers, artists, and activists that take an alternative approach to the design of video games and virtual worlds. Groups such as Games for Change and the Serious Games Initiative foster games made for educational, artistic, and activist purposes. In the same vein, Katherine Isbister suggests fostering training and production environments in which people of a specific group can produce stories, characters, and gaming scenarios that are imbued with their aesthetic, concerns, and interests as a community [14].

Training and higher education, particularly in the area of programming, is a foundational start to a career in communication technology industries. American Indian/Alaska Native and First Nations representation in the game industry is likely low because there are so few in Computer Science—the percentage of American Indian/Alaska Natives earning Computer Science bachelor's degrees in the U.S. only increased from 0.4% to 0.5% during 1985 to 2005 [28]. In an effort to overcome the economic, social, and cultural factors that influence this low rate, Aboriginal Territories in Cyberspace (AbTeC) launched the Skins initiative, a game "modding" (meaning modification of existing games using game engines and 3D art software) workshop for Aboriginal youth that teaches them design, programming, art, animation, and audio.

AbTeC, based out of Obx Labs at Concordia University in Montreal and directed by Lewis and Fragnito, is a network of academics, artists, and technologists that encourages Indigenous participation in online culture and exploration of new media technology. The main objective of the AbTeC research network is to discover, define, and implement methods by which Indigenous people can use networked communication technology to strengthen our cultures. In line with our objective, we conducted a series of professional workshops that brought together academics, artists, and activists to discuss the role of new media technologies in North American Indigenous cultural production in general and in storytelling in particular, as well as to outline curriculum for teaching First Nations youth how to use such technologies. We drew upon what we had learned in these initial workshops, as well as our production activity (building AbTeC Island, our studio/ research outpost in the virtual world Second Life and creating a machinima—machine cinema, or video filmed within a virtual world—series called TimeTraveller™), to design a pilot curriculum on game- and virtual-environment development in the senior level art course at Kahnawake Survival School, the high school of the Kahnawake Mohawk First Nation.

In conducting Skins, our goal was to encourage First Nations youth to be more than consumers of digital media; rather, we wished to show them how they themselves could be creators with a cultural, critical approach to video games. In this paper, we first reflect on the motivation and curriculum other youth-oriented virtual-world and game-development workshops. We then detail the motivation and structure of the Skins curriculum with example materials. Afterward, we discuss the process and outcome of the Skins pilot held at Kahnawake Survival School. Finally, we finish with conclusions and suggested future work.

2. YOUTH WORKSHOPS

The process of modding or developing a game or virtual world is experiential—it calls on cognitive learning, media awareness, communication and teamwork with specific roles, participatory design, and creating a network using experts and resources outside the classroom.

Many game development and modding workshops task participants with creating educational games that will appeal to their peers [9, 10, 12, 16, 17, 18]. More aligned with Skins, other workshops are aimed at teaching skills like programming through the process of designing a game. Game modding workshops let students adapt a complex system and critically reflect on commercial games made with the same technology [24]. Youth have the opportunity to change environments, stories, characters, and objectives in games they have often either played or heard of. Additionally, modding costs less and is less time consuming than commercial virtual environment and game development [11, 24]. These aspects motivated AbTeC to select Second Life and Unreal as modding platforms for the Skins workshop.

Jacob Habgood, who believes that anyone can and should learn how to develop games, adapts Bloom's cognitive learning to his workshops. Students engage in 1) knowledge, in which they observe and recall factual information, 2) comprehension, in which they understand the meaning of knowledge, 3) application, in which they apply knowledge in new situations, 4) analysis, in which they identify and extract patterns in knowledge, 5) synthesis, in which they use old ideas to create new ones, and 6) evaluation, in which they reflect on the ideas [11]. In Yasmin Kafai's workshops [16, 17, 18], youth designed games with math and science topics for other youth to play and simultaneously learned programming; contemplated interface designs; designed visual elements; came up with stories, dialogue, and characters; wrote instructional strategies; and created fraction representations. Youth were put in the active role of constructing their own programs and in the end, constructed new relationships with knowledge in the process [16].

When cognitive learning is put to practice in game development, youth interact not only with the technology and skills, but also with the media itself. Particularly in the case of game modding, youth are given the opportunity to empower themselves as creators of media rather than simply being consumers [24].

Another type of workshop is geared toward non-gamers. Most attention in this area of workshops for non-gamers has gone to girls due to the lack of females in game industry [13]. Many workshops start from the basis that girls play games less than boys, or play games only from certain genres. Regardless of prior experience with game play, game modding and development are accessible pathways to learning communications technologies, in part because of the shared knowledge amongst youth [25].

Youth need to start with a basis of common knowledge in order to collaborate and communicate effectively. In a workshop setting, this means ensuring all youth have a basic understanding of the

workings of every role and steps required during the process of developing or modding a game. Approaches vary but most youth workshops put the teachers/mentors as facilitators who are present to guide but not control the communication between youth unless teamwork issues arise.

Participatory design is paramount to game development education. In a workshop conducted in Denmark, researchers found that participatory design projects need clear definitions on the roles of participants and how they contribute to the development of the game [25]. In other words, game development requires a team with a variety of very specific roles. Youth can learn design, programming, art, animation, writing, communication, sound design, and a myriad of other skills in the process of developing a game. When youth take on individual responsibilities, they feel accomplished as a member of the team. Teachers/mentors can help each student with their role, but it's important that each youth have a sense of individual participation and learn specific skills.

Further, youth become active participants by having team-driven or personal direction facilitated in workshops. The Girls Creating Games Program found that, when girls were provided the skills and support to design choose-your-own adventure games, they resisted gender stereotypes by offering players the chance to win or lose the game and providing more opportunities for personal triumph than opportunities to help others [2]. They also found that when youth are given the option to express themselves, they are more likely to retain knowledge [2].

Although game development workshops are often short—ranging from a few hours to a few months—they rely on long-term layered learning to retain and enhance the varying roles needed to develop a game. Workshops often bring in experts from the industry to give students hands-on experience with people who work day to day with the technology. Researchers are brought in for conceptual elements, such as the importance of characters in creating emotionally driven games. There are also numerous resources online for students to access during the workshop or afterward, ranging from tutorials for using software to articles about how to break into game industry.

The overall hope for all workshops is for youth to take the knowledge learned—whether practical skills or developmental life lessons—into the future, by accessing higher education and possibly entering the communications media industry.

3. SKINS CURRICULUM

The Skins curriculum was created to teach First Nations youth a multitude of skills related to game production while at the same time encouraging them to develop game concepts, characters, and mechanics based out of their own cultural experience [22]. The curriculum materials can be used in numerous settings, whether intensive or long-term workshops, extracurricular programs, or in-class projects. Skins can also be adapted into a regular class schedule, as its content could fit well in Culture, History, Art, Design, and/or Technology classes. The curriculum is available online for free [22].

The Skins curriculum contains several aspects that are uniquely oriented towards First Nations students. One is the emphasis on traditional stories and storytelling techniques, which serves to both encourage youth to reflect on how stories are transmitted in their community and how they themselves can participate in the preservation, evolution, and future transmission of those stories. A second such aspect is the inclusion of a community partner who plays a central role in mentoring the youth and ensuring that cultural elements, such as language and stories, are represented in ways that reflect the history and values of the community.

The curriculum covers traditional storytelling as well as topics central to game and virtual environment production, including: Aboriginal storytelling traditions, Aboriginal storytelling techniques, Aboriginal storytelling across media, concept development, interactive narrative, level design, art direction, 3D modeling, 3D animation, digital audio, and project management.

3.1 Modules

Lessons are broken down into 4 modules—Play, Storytelling, Game Design, and Technical. Play involves playing video games, board games, and viewing films by Aboriginal filmmakers. Storytelling helps students reconnect with their culture and reflect on choices for their game design. The Game Design module walks students through the pipeline process without needing to use technology. Technical lessons break down the practical skills needed to develop a virtual world or video game.

3.1.1 Play

The Play module was created to provide opportunities for students and mentors to get acquainted with each other at the beginning of the workshop series by playing video games, board games, and viewing movies made by Aboriginal filmmakers. These sessions can also be scheduled throughout the workshop series to break up long work periods.

Play consists of the lessons Board Games, Video Games, and At the Movies: Aboriginal Films

3.1.2 Storytelling

The lessons in the Storytelling module are designed to give students a chance to listen to stories told by elders as well share their own stories. Students learn about the different ways that stories can be told from traditional oral storytelling to comic books, films, and narrative in video games. The lessons at the end of this module are meant to help students work as a team to decide on a story they would like to tell in their own video game. Students will also learn how to write the narration that will be featured in the introduction and cut scenes for their game.

Storytelling lessons include Seeing Red, Listening to Stories, The Root of a Story, Translating Stories, Sharing Stories, Deciding on a Story, and Narration for Opening & Cut Scenes.

3.1.3 Game Design

The Game Design module is intended to help students take their idea for a game through implementation in preliminary planning and group work. The lessons concern how to create a basic layout and design for game creation through paper-prototyping, how to test the game idea without even turning on a computer, and designing the concept art for the game.

The Game Design lessons consist of What's in a Game?, Game Development Process, Paper Prototyping, Game Design Documents, Playtest I, Playtest II, Maquette Building, Introduction to Concept Art and Character Design, Drawing Basics for Concept Art, Technical Drawing for Blender, and Finalize Technical Drawing for Blender.

3.1.4 Technical

The lessons in the Technical module jump students into the hands-on work required for a successful game. The module employs Second Life as a preliminary step before using the game engine Unreal. Lessons involve the production pipeline from beginning to completion.

Unlike the other modules, the Technical lessons are further divided into the subcategories: Modeling, Textures, Animation, Unreal, and Sound. The overall Technical module lessons include Production Pipeline, then Levels & Naming Conventions. Modeling lessons include Welcome to Second Life; Intro to Building in Second Life; Welcome to Blender; and Modeling a Wooden Manikin Using Blender lessons 1, 2, 3, 4, and 5. Texture lessons include Introduction to Photoshop and Photoshop Continued. Animation has Animation Principles I, Animation Principles II, Introduction to QAvimator, and Make a Jump in QAvimator. Unreal lessons include From Sketches to a Finished Level, Level Creation, Level Creation I, and Level Creation II. Lastly, Sound has Audacity, Sound Walk Through, Record Narrative/Voice/Sound Effects, and Sounds to Unreal.

3.2 Example Lessons

3.2.1 Storytelling IV - Ways of Storytelling: Translating Stories into Other Media

Population: This presentation was created for young adults between the ages of 15-17. It is a discussion-based presentation that introduces storytelling across varying media with Aboriginal stories.

Instructors' Prerequisites: The lecturer should be very familiar with Aboriginal storytelling as well as Aboriginal comic book artists, writers and animators in order to give examples to discuss the various ways in which we can use media to tell our stories.

Students' Prerequisites: No prerequisites necessary.

Duration: 45-minutes

Objectives:
1. Through lectured presentation, students will learn about the links between storytelling and art using examples of comic books and animation.
2. Through discussion students will consider video games as another mode of storytelling.

Vocabulary: Oral history, Translation, Fables, Legends, Mythology, Entertainment, Education, Culture, Tradition, Games, Comic Books, Animation

Equipment, Software, Materials: Projector connected to computer for display.

Preparation: The lecturer must bring the presentation slides and prepare for discussion. The presentation slide show should feature images from the examples of films, comic books, and games discussed by the presenter.

Resources:
Suggested Comic Books:
"When Darkness Calls" by Steve Sanderson, http://www.comminit.com/en/node/283066/36

"Fala" by Beth Aileen Lameman, http://www.zeros2heroes.com/property/fala

Suggested Animations:
"By the Rapids" by Joseph Lazare, http://www.bytherapids.ca/

Procedure:

1. Storytelling: Introduction (10min)

To begin the discussion with the students, establish what oral history and storytelling is. Start out with talking about how oral history is passed along generations over the years.

Present the different modes of telling a story:
1) Historical accounts
2) Personal stories, family history
3) Creation stories, character stories

Talk about how a story changes along the way depending on whom the person is sharing it, as their own style will influence the telling of the story. For example, the creation story has been told for generations across different Aboriginal cultures. Even though each storyteller maintains the root of this story, their own style and personality will change the creation legend to varying degrees. Provide an example of how a story changes from generation to generation by showing examples from films such as *The Seven Samurai* (Akira Kurosawa) and *Star Wars* (George Lucas) that share the same root of a story.

2. Link Between Storytelling and Art (5 min)

Before showing examples of comic books and animations as stories told through other media, start by showing historical examples of how Aboriginal people have always translated information not only through oral histories but through visual language. Provide examples of pictographs, rock carvings, and hide paintings to show how Aboriginal people have used images to communicate throughout time.

3. Storytelling Through Comic Books (10min)

Comic book artists tell stories using images and words. Aboriginal artists are telling their stories through comic books. Some stories in the comic books are based on old tales such as Beth Aileen Lameman's "Fala" which was inspired by "Alice in Wonderland." The comic book is available online at http://www.zeros2heroes.com/property/fala for visual examples of Beth's work. Steve Sanderson's "When Darkness Calls" was inspired by both a personal story (about his cousin who contemplated suicide) and the Cree figure, Wesakechak. Present examples of these artists and their way of adapting traditional Native and non-Native stories as well as personal stories in their work.

4. *Storytelling Through Animation and Film (10min)*

Another form of popular storytelling is done using animation. Joseph Lazare's cartoon series "By the Rapids" on APTN is an example of animation. The story takes place on a reserve with a contemporary Aboriginal family, making this style of storytelling coming from a personal point of view as a man who grew up in Kahnawake. More information about Lazare's work can be found at http://www.bytherapids.ca/. Another example of Aboriginal animation is "Raven Tales," a 13 part series that uses computer-generated images to tell traditional legends. More about "Raven Tales" can be found at http://www.raventales.ca/?p=46. Show the participants examples of these cartoon animations and discuss what kinds of stories are being presented here.

5. ***Aboriginal Games (5 min)***

Before introducing storytelling through video games in the final section, bring up how game play is an inherent part of Aboriginal culture just as storytelling is. Throughout time we have used games in order to teach, play, train hunters, and solve conflict. Briefly provide visual examples and a short description of Aboriginal games such as Snow Snake, a competition to teach hunting, and Lacrosse which continues to be a popular sport today.

6. ***Storytelling Through Video Games (10 min)***

Just like storytelling, games similarly serve the purpose of entertaining, educating, or delivering a message to name a few. How can the types of stories discussed in this lecture such as historical accounts, personal stories, fables, legends, and myths be told in a game? What kinds of stories would make an interesting game? There are some stories that have more visually interesting elements then others. Thinking about these types questions now will help later on when students share and select their stories for later on in the series. To start a discussion, play video clips of popular video games and then discuss the kinds of stories are taking place after each one.

3.2.2 Technical – Unreal: Level Creation I

Population: This lesson was created for young adults between the ages of 15-17.

Instructors' Prerequisites: The instructor must have experience with building an additive subtractive map in the Unreal editor, which includes using BSP brushes, lighting, packages, static meshes [including sky domes], and collision volumes.

Students' Prerequisites: Unreal: Level creation demonstration, Basic experience with 3D environment [Second Life or Blender] is a plus but not required.

Duration: 45 minutes.

Objectives:
1. The students will get hands on training with the interface and basics of the Unreal Editor.
2. Explain the difference between the two map types [Subtractive].
3. Show how the BSP brush is used to quickly create rooms and geometry.
4. Intro to Lighting and using the Properties window.
5. Introduce them to the concept of packages and the Generic browser.
6. Checking and using of the different assets included in packages [Skeletal Mesh vs Static Mesh, and Material vs Texture].

Vocabulary: Game engines, Level design, subtractive map, additive map, BSP brushes, packages, Generic browser, static meshes, skeletal meshes, Materials, Textures.

Equipment, Software, Materials: The instructor and the students need computers capable of running the Unreal editor. Installed copies of the game Unreal Tournament III that include the Editor.

Preparation: Test the Unreal Editor and all the features to avoid unexpected but possible crashes.

Resources: Bonus DVD tutorials that comes with the Collector's edition of Unreal Tournament III.

Procedure:

1. Introduction to the Unreal (15min)

Start with a brief overview of the interface. Quickly explain the camera controls. Start with a subtractive map; explain how to use BSP brushes to subtract a simple room. Add a light to the room and move it then explain the camera controls again and let the students practice for a min. Then have them experiment with the light properties [brightness, scale, fall off and color]

2. Dressing the Map (30min)

Remind the students of the concept of packages and the main different assists. Then start applying materials to the walls of the subtracted room, and then use the surface properties to modify and fix the texture placement on the walls. Have students practice that for few min, repeat if necessary. (10min)

Now start opening more packages and placing static meshes, also subtract another room and a hallway/doorway between them and start applying materials and placing static meshes in the other room. (10min)

Give the students time to practice and encourage them to be creative. Answer any questions they may have during this time. (10min)

4. SKINS PILOT

The Skins workshop was piloted with ten Mohawk youth in Owisokon Lahache's Senior Graphics Arts course at Kahnawake Survival School (the Kahnawake First Nation's Mohawk-language high school) throughout the 2008-2009 academic year. We will discuss the dynamics of the workshop environment as well as the game mod that resulted.

4.1 Workshop Dynamics

The on-site research team (Lewis, Fragnito, and research assistants) held weekly meetings, which Lahache joined when her teaching schedule permitted. These meetings allowed us to constantly adjust the curriculum as the workshop developed. Causes for adjustment included the students' rate of progress, input from guest lecturers, and changes in the school's general academic schedule. The last issue could be particularly challenging, as we were on-site for two hours every ten days and for a two-day all-day intensive session once a month.

It is important to emphasize the centrality of Lahache's participation. As a respected teacher and artist within the Kahnawake community, she brought a deep understanding of both storytelling traditions and creative expression within it. She fully embraced the curriculum, to the point that she herself learned all of the technical skills involved, and her enthusiasm was palpable to the students. When the teacher is willing to devote a pedagogical day and a Saturday every month, the students understand that she believes what they are doing is important.

We brought in a wide range of guest lecturers, such as a Level Designer, Level Artist, Sound Engineer, Games Writer, and Comic Book Artist. We found Aboriginal representatives, whenever possible, believing that they would make more fitting role models for our students.

The workshop began with the Play and Storytelling modules to root the workshop solidly in stories and their role in both serious and playful contexts within the community. Lahache, guest lecturers, visitors from the community and the students shared

stories, talked about the stories' origins, permutations and structure, and brainstormed which ones might make interesting games.

In the second month, we commenced with the Technical module. We began by working in Second Life as a way to accustom the students to moving, designing characters and generally working in three-dimensional space. Second Life also has the benefit of being a shared space, allowing us to conduct common lessons in the same virtual sandbox. We then moved on to more sophisticated building tools such as Blender and, ultimately, the Unreal Editor (Fig. 2), to create the actual game.

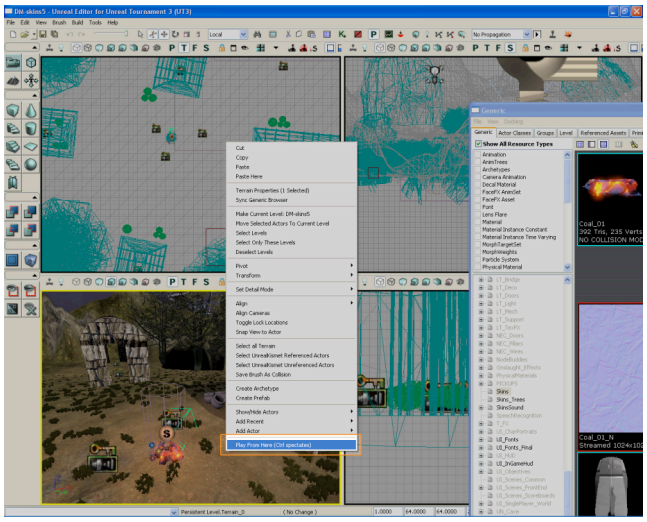

Figure 2. Screenshot of Unreal Editor.

In the third month, we began the Game Design process. Lewis, Fragnito, and Lahache acted as producers while the students chose roles suited to their interests and previous skills. Roles included designers, artists, programmers, or hybrids such as technical artists. We gave students the choice between modding a virtual environment, or modding in a video game engine, thinking that some students might be more interested in one than the other. However, the decision to create a game mod was unanimous. Using what they were learning in the other modules, the students selected the stories and brainstormed how to adapt them to a game environment and gameplay. They were encouraged to stand out as individuals with their skills while maintaining a sense of teamwork and group integrity.

Classroom instruction was supplemented by a Skins blog. Instructors (including the producers, research assistants, and guest lecturers) posted lessons to the blog, and students posted work-in-progress. We used it to link to additional resources as well, such as information about game design programs in the Montreal area. When the first level of the game was complete, with environment, characters, objects, and sound all in place, we made a video documentary that gave students an opportunity to reflect on their experience and share it via the blog [21].

4.2 Making The Game

4.2.1 Synopsis

The game developed by the students is called *Otsi:! Rise of the Kanien'keha:ka Legends*. ("Otsi:" is a Mohawk word that roughly translates to 'the bogeyman' and 'Kanien'keha:ka' is what Mohawks call themselves.) The narrative centers on an Iroquois hunter on a mission to stop a monster, the Flying Head (Fig. 3), from destroying his village (Fig. 4).

The students designed an entire multi-level game that took players from the Flying Head's origin story through to his confrontation with the hunter. Given time constraints, they decided to focus production on the final level, where the hunter and the Flying Head fight to the finish.

Figure 3. Screenshot of the Flying Head.

The game was implemented as a mod on the Unreal first-person shooter genre. The player takes the role of the hunter, and sees the world from his eyes. The player begins outside of a village that has been razed to the ground. The sole survivor tells him about the Flying Head and its attack on the village, and warns the player that it is now heading towards Hunter's village.

The player has to then fight his way across a landscape based on the countryside around Kahanwake. Creatures from other Mohawk stories including the Hoof Lady, the Monkey Dog, and the Tree People interrupt the journey. Each creature has its own stories; some assist him, some hinder him. The journey ends at Hunter's village, which the Flying Head is attacking. Hunter must fight him off, which requires him to use the information he gathered from characters along the way.

Figure 4. Screenshot of the village.

4.2.2 Challenges

The main challenge we faced in the workshop had to do with the sheer quantity of content that we needed to cover, coupled with the need—created by the substantial production hours necessary for 3D modeling, animation and level-building—to proceed with all four modules in parallel. We knew that if we didn't get the

students building as soon as possible, they would not be able to complete a presentable level. Our response was to stage the modules so that eventually they were all running in parallel, though our original preference had been to conduct the Play and Storytelling modules first and then move on to the Design and Technical components. The result was that the third through sixth month were probably too heavy, and too fractured between the modules.

Before the workshop we debated extensively about whether we needed to start the students in a 'kinder' environment like Second Life as opposed to confronting them with the complexity of Blender (Fig. 5) from the beginning. We chose to start with Second Life, and, while that environment has several pedagogical advantages (shared workspace, easy object creation and avatar customization, etc.), the students' healthy ability to absorb instruction in the more complex tools indicates that we could start with them.

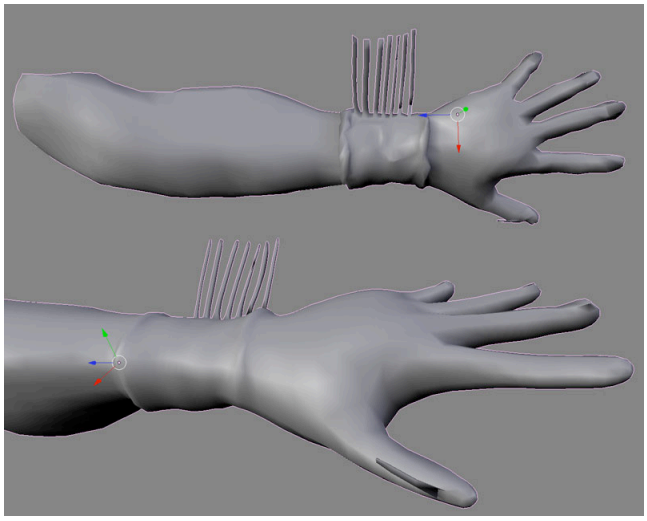

Figure 5. Screenshot of the hunter's hand in Blender.

Lahache and the Survival School administration were extremely accommodating, but we still found ourselves tripped up at times by the need to subordinate our schedule to the changing schedule of the institution. The next iteration will hopefully take place over a more compact, focused timeframe, minimizing opportunities for slippage.

Throughout the process, beginning with the first planning meetings two years before the workshop was conducted, a central concern was the issue of what stories—if any—were appropriate for remediation. The genre chosen—first-person shooter—raised even more questions. The most difficult aspect here is that it is virtually impossible to establish who has authority, or even simple legitimacy, to make such decisions. We relied heavily on Lahache, Fragnito (herself from the Kahnawake community), our guest lecturers from other Aboriginal communities, and even the students themselves to make these judgments. Each new story will have to undergo similar inspection.

4.2.3 Outcomes

We were encouraged by the degree of participation and intensity of commitment shown by the students. In addition to the normal class hours, they spent considerable amounts of their free time at the intensive workshops. We asked them to undertake a rigorous technical curriculum that included programming, art, design, writing, audio and image production; that demanded both teamwork and leadership from each participant; and that required them to improve their time management, critical thinking, and cultural reflection skills. Though a few students' participation waned towards the end of the year, a core group of six persisted through the entire process.

The level that they built is a rich representation of their story, and, by extension, themselves and their community. The landscape reflects that of the Kahnawake area, and the longhouses in the village are modeled after traditional Iroquois structures. The Flying Head came, as one of them said, "straight from the nightmares I had when my auntie told me stories".

Anecdotal evidence such as this suggests to us that the workshop met most of its objectives. Stories from the community came alive for the students in both the telling and discussions about them, and, ultimately, in the game itself. They were then able to synthesize their own original story, and furthermore, transform that narrative into a gamespace and gameplay. They learned the technical skills necessary to then implement the game to a point that it was playable (if not entirely finished).

5. CONCLUSIONS AND FUTURE WORK

We find these outcomes encouraging. They point the way to further work integrating instruction in technical skills with Aboriginal stories to present youth with a curriculum that engages them individually and as members of their community.

The workshop provided an excellent context in which we could pursue AbTeC's research interest in remediating Aboriginal stories and storytelling techniques. In particular:

1) Kahnawake youth are interested in integrating the stories they know from their communities into new media formats.

2) They are respectful of the stories, but are creative about imagining how they might be modified or expanded—where appropriate—to accommodate new media forms of telling.

3) They are capable of translating those stories through the complex development process necessary for creating a digital game or environment [19, 20].

Given these outcomes, we feel there is more work to be done. We are currently working with three of the pilot students to more fully realize the level they created, bringing them into Lewis' research lab as Junior Research Assistants while they attend CEGEP. In the near future, we would like to follow up with the whole group to determine whether they have continued interest in technology and if the workshop influenced their higher education choices and/or professional choices. In future workshops, we will conduct interviews with youth as the curriculum progresses as well as at the completion of the workshop to verify their experience.

We are quite interested in conducting Skins with Survival School again in order to validate the curriculum. We also hope to find other Aboriginal communities who wish to try the workshop. The curriculum is available for free from the AbTeC website [22], and can be parsed so that even communities which may face technical resource challenges can still conduct an interesting workshop with only the Play, Storytelling, and Game Design components.

Lastly, we are in discussion with Concordia University administration about the mounting an intensive summer institute,

which would serve to also familiarize students with the university environment and grant them credits for their participation.

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