

Phase I Final Progress Report
Grant #: 1 R43 CA096158-01
Interactive Smoking Tobacco for Adolescents
Project Period: 07/15/2002 – 06/30/2003
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Summary of Specific Aims:

- Aim 1. Design an interactive smokeless tobacco prevention/cessation program for adolescents that makes use of computer-based technologies (including CD-ROM and Internet) to deliver tailored content and strategies to reduce use of ST among young adults. This program will draw from the developers' extensive experience in the area of smokeless tobacco and the creation of interactive media.
- Aim 2. Develop a prototype (Alpha version) for a stand-alone CD-ROM program that contains effective components for promoting adolescent ST cessation elements, including video, audio, animation, text, graphics, and interactive programming. This prototype will assess current ST use and branch between cessation and secondary prevention, depending upon the level of ST experience of the user.
- Aim 3. Identify existing Internet web sites that contain content materials that will complement the interactive CD-ROM prevention/cessation program (e.g., oral pathology images; nicotine replacement information; stress management strategies; exercise regimens).
- Aim 4. Within the CD-ROM prototype, implement links to appropriate web sites that enhance the experience of the adolescent seeking information about health risks of ST use or cessation techniques.
- Aim 5. Evaluate the efficacy and consumer satisfaction of the interactive program with 100 adolescent ST users at two diverse geographic sites. Additionally, a single subject methodology will be used with five subjects to control for external validity.

Publications:

There were no manuscripts written during the grant award period.

No inventions have been made under the grant or award. See Final Invention Statement and Certification.

Phase I Final Report

Development of Prototype Smokeless Tobacco Prevention and Cessation Program

The Phase I task was the production and evaluation of a prototype for an interactive tobacco prevention/cessation program for adolescents. This prototype program, titled *SpitWorld*, makes use of computer-based technologies to deliver tailored content, and strategies to prevent initiation and reduce use of ST among adolescents. Combining video, graphics, and text to educate middle school students, the program provides resources that address both the risks of ST, as well as offering a cessation program for students interested in quitting.

Previous research and media projects, by the principals in this proposal, that focused on tobacco prevention and cessation interventions for adolescents, provided the foundation for the content and organization of *SpitWorld*. The challenge was to revise an existing interactive cessation program (*X-Chew Challenge*®), and incorporate prevention components geared to teens and preteens that had not yet experimented with, or begun to regularly use, smokeless tobacco. This program was created and refined based on the current guidelines established by the U.S. Department of Health and Human Services (CDC, 1999) and then modified for the target group of middle school students. During an extensive design phase, the *SpitWorld* development team assembled scripts, storyboards, and flowcharts to create a game-like atmosphere that would appeal to adolescents, while educating them about the hazards of smokeless tobacco.

After exploring several different visual metaphors for the *SpitWorld* graphical user interface, we chose a video arcade "look and feel" that encouraged the user to click on game icons to explore the four games offered. The student had random access navigational options and could enter or leave a game at any time. Many design decisions were based on our extensive knowledge of the wide variation in both students' computer skills, and their familiarity with smokeless tobacco.

Before exploring the program in the classroom on the Macintosh computers we provided, the students filled out a tobacco use survey. The survey asked about previous experience with ST and cigarettes, intentions

to use tobacco as a teenager and adult, current tobacco use among their five best friends, and parent and sibling use. For purposes of data collection, the computer generated a consecutive four-digit number that the student wrote on their questionnaire. This allowed them to anonymously complete tobacco use and post use consumer satisfaction questionnaires. This number was stored in a log file on the computer's hard drive which enabled us to track the time spent in each area of the program and relate the tracking data to their evaluation questionnaires.



SpitWorld Home Interface

The *SpitWorld* program offered an engaging opening with a “splash” screen, incorporating a carnival “barker” voice, enticing the students to try some of the games. The user had the option of selecting one of the four main areas of the program: Fortuneteller, Photo Booth, X-Chew Challenge Baseball and Virtual Reality Fly-Thru Chew.

Fortuneteller offered several future scenarios based upon the user's decision to either become an ST user or not. In each case, there were three fortunes for each choice, based upon relationship with friends, health outcomes and financial effects. For example, the student could choose to see the future if they became a regular user of ST, triggering an unhappy fortune via a video vignette that appeared in the fortuneteller's crystal ball.



Fortune Teller



DipPix Photo Booth

DipPix Photo Booth allowed the user to select one of four faces of a young teen and take a picture. This generated a photo strip of four images: the original picture of the teen, the teen as an ST user, a close-up of the teen's mouth, and finally the oral pathology that resulted from ST use. These images were accompanied by rollover descriptions of how the student first began using, the first signs of lesions in the mouth, followed by the long-term effects of their using ST.

The *X-Chew Challenge* baseball game is an adaptation of our successful *X-Chew Challenge*® smokeless tobacco cessation program for adolescent users of ST. This program, developed for the State of Oregon Tobacco Control Program, combines video, graphics, text, and animation to assess and evaluate users based on their smokeless tobacco use, and assists the user in arriving at a specific behavior change plan based on responses to program queries regarding current tobacco use behavior, level of addiction, and readiness to quit. The *X-Chew Challenge*® uses the metaphor of a baseball field to provide a visual and spatial image for users to assess where they are in the quitting process. The four bases indicate the major stages in the smokeless tobacco cessation process



X-Chew Challenge Baseball Game

(i.e., I Am Ready, I Am Quitting, I Have Quit, and I Am Tobacco Free), and the four base paths outline the preparatory steps necessary to reach each stage (i.e., Getting Ready, Planning to Quit, Dealing with Withdrawal, and Avoiding Relapse). The program guided users through all the steps and, when each base was reached, provided messages of encouragement.



Fly Thru Chew

Virtual Reality Fly Thru Chew took the user on a virtual reality tour inside a tin of smokeless tobacco to see all of the chemicals contained in snuff, as well as other applications for these chemicals. For example, nitrosamines were noted as a deadly poison and paired with the image of a teen's face morphing into a skull. The chemicals seen during the Fly Thru Chew were: nicotine, formaldehyde, arsenic, nitrosamines, Polonium 210, and ammonia.

Evaluation of Phase I Prototype

Evaluation

The evaluation of the Phase I prototype program *SpitWorld* was conducted in three phases: Advisory Committee/Expert Panel, Pilot Test, and Middle School Student Evaluation.

1. *Advisory Committee/Expert Panel.* Before completing production of the final prototype program, we consulted with tobacco-cessation professionals from the Deschutes Research, Inc. Advisory Panel. The results from Drs. Hatsukami, Stotts and Seeley included feedback on the format, content, navigation system, and all other aspects of the program. Feedback was compiled and grouped into categories, and used to guide development of the Phase I program.

2. *Pilot Test.* Twenty middle school students were recruited from the Eugene/Springfield area to test the program with minimal instruction. Test subjects provided valuable information on the programs' strong points, as well as those areas that needed further development. Students were observed while navigating through the program in order to enable us to identify any problems with navigation or instructions. In order to solicit information on changes in format or content, each student was interviewed directly after using the program. They were also queried about overall satisfaction with the program.

3. *Middle School Student Evaluation.* Having previously established a relationship with the Cottage Grove Middle School, located in a community near Eugene, we were able to enlist the assistance of a teacher to recruit 170 students in 6th, 7th and 8th grades to try the program. We took four iMac computers to the school and set them up in the teacher's classroom. Before taking the program, each student filled out a questionnaire that asked about prior experience with tobacco, attitudes towards people who use tobacco, and intentions to

use tobacco. After completing the program, the students were asked to complete a consumer satisfaction survey consisting of 11 items, measuring overall satisfaction with the program, perceived usefulness of the information, likeability, level of interest, and ease of use. Ratings were made using a 5-point Likert scale. Almost all of the participants rated the program favorably (gave rating between 1 and 3 on the Likert Scale) on all items. They rated highly the usefulness of the program, the ease of use, and their overall satisfaction with the program (Table 1).

Table 1 *SpitWorld* Evaluation.

Program Evaluation (N = 170)	Five-Point Likert Scale	Mean (S.D.)
How interesting did you find the <i>SpitWorld</i> program?	1 = very interesting	2.67 (1.297)
How complete was the program in providing information about smokeless tobacco?	1 = very complete	1.90 (.985)
How much new information about smokeless tobacco did the <i>SpitWorld</i> program provide?	1 = a lot of new information	2.36 (1.275)
How well did you like the arcade game interface?	1 = liked a lot	2.70 (1.164)
How much did you like the music, sound effects, and voices in the program?	1 = liked a lot	2.77 (1.117)
How easy was the program to use?	1 = very easy	1.59 (.895)
How strongly would you recommend the program to friends who want to learn about or quit smokeless tobacco?	1 = very strongly	2.41 (1.295)
Overall, how would you rate the <i>SpitWorld</i> program?	1 = excellent	2.76 (1.133)

Discussion of Evaluation Results

The results of the Phase I *SpitWorld* evaluation provide strong support for students' willingness to receive tobacco information when presented in an interesting and engaging fashion. We measured the amount of program exposure by the number of seconds each user spent in each of the four areas of the program, and were encouraged that the average time for using the program was about one hour. The majority of users visited all areas of the program, even returning to certain areas multiple times.

Approximately 43% of the sample was comprised of students in the eighth grade, 25% were seventh graders and 32% were in the six grade. Sixty-five percent of the sample was male and 34% was female (see Table 2). There were some differences among types of users: males spent an average of ten minutes longer in the program than females, and 6th graders rated the program more highly and spent longer in the program than 7th or 8th graders. However, there were no significant differences between males and females in overall satisfaction with the program.

Table 2. Grade level and gender*

	6 th	7 th	8 th
Male 57.6%(N=98)	28.6% (N=28)	27.6% (N=27)	43.9% (N=43)
Female 30.6%(N=52)	34.6% (N=19)	23.1% (N=12)	42.3% (N=21)

*Twenty students did not indicate gender.

Another notable finding was that 7.3% of the sample had tried ST on at least one occasion, and 12.8% indicated that they thought they might, or would definitely, use ST as a teenager. Furthermore, 23.8% noted that they had a parent who used ST. These items are powerful predictors of future initiation of ST use.

The consumer satisfaction items further attest to the perceived value of the program (see Table 1). Students were very positive in their evaluation, giving the program an overall high rating, and indicating that they would recommend the program to others. Students found the program easy to use, and reported that they learned new information. These results are very encouraging, demonstrating students' receptivity to tobacco prevention information presented in an engaging game-like format. The teachers two whom we have shown the *SpitWorld* prototype program have been very enthusiastic in their support. Their responses have been the most positive response we have ever received from educators for any adolescent program we have developed. We had no difficulty soliciting letters of support, as teachers want to use the program in their classes.