

**Vstreet.com:
A Web-Based Community for Youth in Transition**

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A. General Scientific and Technological Aims

The purpose of this project was to develop and evaluate a Web site on teaching life skills to youth in transition. The site, Vstreet.com, was designed to serve youth affiliated with social service agencies in foster care, Job Corps, or Boys & Girls Clubs of America, alternative schools, etc. Sustained contact following the completion of program services is crucial to youths and their service providers. Once these youths leave care they require ongoing and extensive individual and community-based support to help them make successful transitions toward independent living. At the same time, agencies are intensively searching for a means of providing these services, tracking their youth clientele, and performing longer-term program evaluations.

Because the viability of this concept is contingent on maintaining contact with youth in transition, a major challenge of the approach was to create a site with content that could attract and empower such youth. To accomplish this, the site we developed (Vstreet.com) is highly visual, reflects youth culture, delivers essential information and training, can be customized by the individual user, and is appropriately entertaining.

In Phase I, consistent with the Phase I objectives, we developed and tested a prototype site for Job Corps youth. This involved organizing the foundational structure and function of the site, developing graphical and written content, writing programming code, and conducting an in-house alpha test of the site, as well as a beta test with a group of Job Corps students. Core features of the Web site developed in Phase I include: a virtual room graphical interface with customizable features, an interactive user check-in, email, address book, calendar, youth/mentor chat room, an art gallery with art created and submitted by teens, poetry written and submitted by at-risk teens, *Getting Ready* e-zine (electronic magazine), and a comprehensive life skills curriculum on apartment hunting.

An evaluation study was carried out with a sample of 125 Job Corps trainees at a large Job Corps Center in the southwest. Results of the study indicated that the Web site was highly effective in increasing participants' knowledge of apartment hunting skills, their confidence in using these skills, and their comfort in talking with others about looking for an apartment, as well as their feelings of peer social support and their intentions of staying in touch with the Job Corps after leaving the program. In addition, teens in the Job Corps sample gave the site consistently high ratings in the user satisfaction survey.

In Phase II, we completed the proposed content development for the site, as well as the administrative functionality of the site, allowing agencies to regulate and monitor their youths' activities on it. In addition, in response to an invitation from NIMH and an offer of supplementary funding for the purpose, we developed an additional curriculum for the site on HIV/AIDS/STIs.

Phase II activity included the following objectives, which were achieved:

- 1) Develop new content and features for the site, including:
 - < Additional interactive life skills curriculums on topics such as getting and keeping a job, preventing sexually transmitted infections, buying a used car, food and nutrition, etc.
 - < Discussion guides for all curriculums and e-zines, and a comprehensive users guide for using the site.

- < A personal journal for expressing thoughts and feelings.
 - < A file cabinet for storing documents generated by instructional curriculums in a personal portfolio.
 - < Extensive interactive help.
 - < An animated serial soap opera that focuses on issues relating to social skills.
- 2) Enhance and extend current features of the Web site, including:
- < Add art and photos to the art gallery, and develop an ongoing process for reviewing and displaying artwork submitted by youth.
 - < Add poetry and develop an ongoing process for reviewing and displaying poems submitted by youth.
 - < Add issues of *Getting Ready* e-zine.
 - < Enhance the operation of creating, managing, and monitoring message boards.
 - < Enhance the operation of creating, managing, and monitoring chats.
 - < Enhance the operation of the calendar, address book, email, and virtual room decorating.
- 3) Produce administrative features on the site that will enable appropriate agency staff to select, configure, and monitor site activities.
- 4) Conduct an evaluation of the *Private Lives* curriculum developed under the supplemental grant received during Phase II.

B. Phase II Research Activities

Description of Vstreet

On Vstreet, everyone has his or her own a virtual room, a personal space that resembles a teen's room in the real world, as shown in Figure 1. Once in their room, teens can personalize it by changing the style of the furniture, the art posters, the color of the walls, the kind of flooring, and even the look of specific items, such as the calendar on the wall, the mail folder, the address book, or the file cabinet. The ability to customize the room was intended to create a sense of ownership, something which at-risk teens cherish but with which they have little experience.

Many of the objects in the virtual room are clickable icons that take users to different features on the site. For example, the wall calendar links teens to their personal calendar. The site, from its graphics to its language, is intended to appeal to youth. The language is frank and simple, and extensive imagery is used to help clarify concepts and to entertain. The general milieu reflects a diverse youth culture that is both realistic and prosocial. The site is structured for exploration; it is not a linear array of activity but an open-ended realm of choices.

The following is a brief description of the features on the Vstreet site.

- § *Log On:* Registered users can access the site any time from any computer by logging on with a user name and password. A simple online support system helps users who

have forgotten login information. (Since the prototype site existed on a local network, access for study participants was limited accordingly.)

§ *Check-In Prompt:* Right after logging on, but before going to their virtual room, users are periodically asked to validate their personal contact information via a few simple pop-up prompts.

§ *Private Lives Curriculum:* This component of the site is one of several full-length curriculums designed to improve life skills. The goal of *Private Lives* is to provide accurate, no-nonsense information about ways to prevent the spread of sexually transmitted infections (STIs). The curriculum is an animated teen drama that takes a realistic look at some choices teens have to make about sex through interactive cartoon animations, as shown in Figure 2. The program tells the story of six high school students who are about to start their training as peer sex educators, but what none of them anticipates is the *extracurricular* education they are about get! Teen viewers follow the characters from the classroom into their private lives as they learn important information and get some tough lessons on preventing STIs.

Specifically, the program shows teens how to:

- § Identify the different types of STIs.
- § Identify the warning signs of STIs.
- § Understand how STIs and HIV can be transmitted.
- § Understand how to prevent STIs and HIV.
- § Understand effective condom use.
- § Learn about getting tested for HIV or STIs.
- § Learn about the frequency of STIs among teens.

Initially, users have to navigate through the curriculum in sequence, but once they complete it, they can go back to any part. The entire curriculum takes about 45 minutes to complete.

§ *Calendar:* Individual users manage personal events on their calendar, and agencies can also post community events. Birthdays of friends from the agency community automatically appear on the calendar. In addition, users can see their horoscope message of the day, which is focused on independent living. Teens can view events by the month, week, or day.

§ *Address Book:* The address book has both a master list and a personal list of contact information. The master list contains contact information for all the agency youth and staff. Users may then create and manage their own personal contact list based on the master list. By using a search engine that contains their peers= hobbies and interests, teens can identify others with shared interests as a step toward developing new friendships.

§ *Getting Ready e-Zines:* Users go to a reading room to read *Getting Ready*, a life skills e-zine. Each issue has teen interviews about personal life skills experiences, animated cartoons about life skills, poetry written by at-risk teens, and other cartoons on simple cooking recipes.

§ *Email:* Every registered teen is given a permanent email address. Users can find email addresses for peer group members and agency staff through their address book.

- § *Chat Room*: Chats are scheduled events that take place among registered users in community groups. Discussions can be open-ended or on a specific topic, and they are monitored.
- § *Bulletin Board (B-Board)*: The B-Board is an electronic bulletin board that addresses a variety of teen topics. Users post messages within a topic area and generate strands of discussion. Like chats, B-Board messages are monitored.
- § *Art Gallery*: The art gallery is a showplace for art and photography submitted by teens. (The prototype site also contained art by the Job Corps Center=s youth.) Artwork is organized into wings. Users can click on any art piece for a larger view and can hang it in their virtual room.
- § *Poetry 4 Ya Mind*: This feature contains an extensive collection of poetry written and submitted by at-risk teens. Users can browse the collection by state and read a poem by clicking on its title.
- § *File Cabinet*: The file cabinet stores teens= portfolios, with key documents generated by life skills training activities on the site. (On the prototype site, for example, this included the information for filling out a rental application.)

Research Methods

The purpose of the Phase II research study was to evaluate the effectiveness of the *Private Lives* curriculum with Job Corps trainees, as a means of testing the effectiveness of the kind of curriculums being developed for delivery to this target group on Vstreet.com. (A copy of the *Private Lives* curriculum on CD-ROM is included in this final report as Appendix A.) Using a pretest/ posttest control group design with random assignment, we examined the impact of the program on two outcome measures: (a) knowledge about HIV and other STIs, and (b) attitudes toward condom use. Our main hypothesis was that, after viewing the *Private Lives* curriculum, Job Corps trainees would show improvements in knowledge and attitudes related to safer sexual behavior and condom use. The results are presented according to two types of data: descriptive information on operational aspects of the program, and inferential data on measures of HIV/STI knowledge and condom attitudes, as well as user satisfaction.

Sample

Participants in this study were recruited from youth enrolled in educational and vocational training at a Job Corps (JC) Center located in a rural area in the Pacific Northwest. This site had a total of 225 trainees. Our sample included 115 youth, ages 16-25 years. The sample was predominantly male (20% female). The ethnic breakdown of the sample was 10.9% Hispanic, 66.4% Not Hispanic, and 22.7% unknown. Racially, the majority of the sample was White (73.7%), with the second largest racial group consisting of participants in the Multiracial category (7%). (See Appendix D, Table 1, for a more complete description of the sample=s demographics.)

Participation in the study was voluntary. All participants received the equivalent of \$10 (\$5 for completing each of the two assessments).

Procedure

To control for extraneous sources of variability as well as threats to internal validity, we randomly assigned teens who agreed to participate to either an experimental

condition, a comparison condition, or a wait-list control group. Of the 120 participants who began the study, 115 completed it: 40 in the *Private Lives* treatment condition, 37 in the Brochures Comparison condition, and 38 in the wait-list control group.

The entire study took place over a 2-week period. During the first week, teens in all three conditions completed the pretest measures (described below). During the second week, teens in the intervention and comparison conditions met in small groups (no more than 15 students) and either viewed the *Private Lives* curriculum or read through brochures containing similar content (see Appendix B). Immediately following this session, teens again completed the measures of HIV/STI knowledge and condom attitudes. In addition, they completed a user satisfaction questionnaire. Teens in the wait-list condition took the posttest assessments over the same time interval as those in the other two groups. Teens in this condition did not complete the measure of user satisfaction.

Measures

All of the measures used were developed for this study. Job Corps Center support staff were trained to administer the measures in a standardized fashion. Trainees completed two of the measures at both assessment periods (pre and post). They also provided background and sexual risk-taking information at the pretest, and those in the intervention conditions provided user satisfaction information at posttest. (Copies of all measures are included in Appendix C.)

HIV & STIs: What's Up?

HIV/STI Knowledge measured trainees' basic knowledge of sexually transmitted infections, transmission, symptoms, and possible treatments. This measure included a total of 20 multiple choice and true/false questions. Scores are reported as the percentage of correct answers.

Condom Attitudes.

The Condom Attitudes scale measures an individual's attitudes toward condom use. It consists of 16 items rated on a Likert-type scale from 0 (*I don't THINK so!*) to 3 (*Totally!*). This scale is an adaptation of O'Donnell, Doval, Duran, and O'Donnell's (1995) measure and has three subscales:

- X Attitudes scale: Consists of 11 items. Asks participants to rate their feelings about different statements about condoms (e.g., condoms can be made sexy, it's easy to get condoms). Higher scores indicate positive attitudes toward condom use.
- X Self-efficacy of condom use: Consists of 3 items asking participants how comfortable they are with getting their sex partners to use condoms.
- X Intentions to use condoms: Contains 2 items, asking about intentions to use condoms in different circumstances.

The original Condom Attitudes scale, as developed by O'Donnell et al. (1995), was used as part of a study examining the demographic variables that predicted condom use for individuals who had received treatment at a clinic for STIs. In that study, the authors reported satisfactory reliability coefficients (Cronbach's alpha = .71) for the 11-item attitudes scale. Our study used total scores (combined across all three subscales) and included two more questions than the original. It was therefore anticipated that the overall

reliability of the scale would increase. (See Results section for a description of our findings.)

Background Information.

A brief demographics questionnaire (11 items) that includes questions about age, race, gender, education, and time with the Job Corps.

Personal Stuff.

This was included as a measure of sexual risk-taking behavior. It is comprised of two subscales:

- 1) **Sexual Activity and Condom Use:** This scale was cited in Shrier, Ancheta, Goodman, Chiou, Lyden, and Emans (2001). It consists of 8 items, and asks users to report their number of sexual partners and their consistency of condom use with different types of partners (main and non-main partners).
- 2) **Risk Perception Scale:** This scale was adapted from O'Donnell et al. (1995) and asks participants to rate on a 4-point Likert-type scale, (0 = *Not a chance* to 4 = *Big time*), how at risk they felt they and/or their partners were for contracting HIV or an STI.

The data from the Personal Stuff measure were compiled to create a new variable called *level of risk*. Values for this variable ranged from 0 *Abstaining/No risk* to 4 *High risk*. (See the Results section for a more complete description of the way in which this variable was calculated and how it was used in the data analysis.)

User Satisfaction.

We used two versions of this measure, one for the comparison condition (brochures), and one for the intervention (*Private Lives*) condition. At posttest, these two groups rated their satisfaction with various aspects of the training on a 4-point scale (0 = *No, nada, zip* to 3 = *Whoa! Totally there!*).

Results

We examined the impact of the training materials on two outcome variables (knowledge and attitudes). We also tested for differences between the intervention and comparison conditions in terms of their satisfaction with the training. The results are summarized using two sections: a description of preliminary analyses and final outcome analyses.

Preliminary Analyses

We conducted independent samples *t*-tests on all demographic information from the Background Information questionnaire to detect any systematic differences between the three groups. Using a .05 alpha level, we found only one significant difference between the groups. Specifically, *more* of the trainees in the brochures condition had previously been involved with other youth programs compared to the other two groups, $X^2(2, N = 120) = 6.72, p = .04$.

Given the relatively small number of participants who either dropped out or had missing data (only 5% of the original sample), analyses of differences between those who

dropped out of the study and those who did not were not statistically meaningful. However it should be noted that of those who dropped out prior to completion, two were from the no treatment condition and three were from the *Private Lives* condition.

Assumptions of MANCOVA.

Our study used a pretest, posttest control group design with random assignment to groups. This experimental design can adequately control for all main threats to internal validity (Shadish, Cook, & Campbell, 2001; Campbell & Stanley, 1963) and allow for more powerful statistical analyses through the use of covariates. Given the power of our experimental design, we were able to address our research questions using a one-way, multivariate analysis of covariance (MANCOVA). MANCOVA has superior power for detecting differences on multiple dependent variables within a single study. In this design, group served as the first independent variable, with three levels: intervention, comparison, and control. Level of risk was the second independent variable, with five levels: is abstaining; has one main partner and always uses condoms; has one main partner and does *not* always use condoms; has multiple partners and always uses condoms; and has multiple partners and does *not* always use condoms. Quantitative pretest scores on the HIV/STI Knowledge measure and Condom Attitudes measure were standardized to form a composite covariate, and posttest scores on these same measures were used as dependent variables.

With our experimental design, many of the theoretical assumptions of MANCOVA were met, primarily that we demonstrated an adequate control of sources of extraneous variability. However, before proceeding, we also needed to evaluate the statistical assumptions of this procedure: (a) multivariate normality, (b) equality of variance-covariance matrices (homoscedasticity), (c) linear relations between all quantitative measures, (d) homogeneous regression of all covariates and dependent variables, (e) reliable covariates, and (f) independence of independent and dependent measures (no multicollinearity or singularity). The results of these tests are summarized below.

Using visual analysis of histograms, we found slight ceiling effects in pre- and posttest scores on both quantitative outcome measures, with the distributions of pre- and posttest scores having a negative skew for many of the group pairs. With respect to the assumption of homoscedasticity, Levene's test of Equality of Error Variances was nonsignificant [HIV/STI Knowledge $F(2, 110) = 0.09, p > .05$; Condom Attitudes $F(2, 110) = 0.82, p > .05$], indicating that the assumption of equal variance covariance matrices was tenable.

We also used visual analysis of scatterplots to examine linearity of relations between and among dependent variables, covariates, and dependent variable/covariate pairs. All scatterplots indicated moderate linear relations. With respect to correlations, the two dependent variables were correlated without being redundant, $r = .30, p < .05$, and the composite covariate was highly correlated with both dependent measures (HIV/STI Knowledge $r = .53, p > .05$; Condom Attitudes $r = .62, p > .05$).

When assessing the reliability of our covariates, we found moderate alternate form reliabilities for the HIV/STI Knowledge measure (equal length Spearman-Brown coefficient = .71) and the Condom Attitudes measure (equal length Spearman-Brown coefficient = .81). Test-retest reliabilities for the HIV/STI Knowledge measure were high (coefficient alpha = .90), as they were also for the Condom Attitudes measure (coefficient alpha =

.95). Convinced that our statistical analysis was appropriate, we began the model selection procedure to choose the most appropriate analysis for dependent measures.

Selecting Appropriate MANCOVA Model.

Because we conducted an analysis using a covariate, we considered multiple models and accepted the most parsimonious. The first model, unequal slopes and unequal intercepts, was abandoned, given that the differences in slopes across the groups were neither significant [$F(4, 214) = 2.39, p > .05$] nor important ($\eta^2 = .04$).

We therefore chose to analyze our data using the second model, assuming equal slopes and unequal intercepts. Using a .05 alpha level, we found that three of four slopes for both intervention and control groups were significantly different from zero. The results listed below are based on an equal slopes MANCOVA model.

Outcome Analyses

We used a .05 alpha level for all statistical analyses. Prior to beginning the study, we posed two specific planned comparisons. The first was that there would be significant differences between the two intervention conditions and the wait-list control condition B in terms of improvements in both HIV/STI Knowledge and Condom Attitudes. The multivariate effect for this contrast was significant, suggesting that there was a difference between the two intervention groups compared to the controls $F(2,108) = 13.67, p < .00$. Further examination revealed that both groups outperformed the controls on both HIV/STI Knowledge $F(1, 109) = 13.14, p < .00$ and Condom Attitudes $F(1, 109) = 9.71, p < .00$. (See Appendix D, Table 2, for descriptive statistics at posttest, and Table 3, for a summary of the MANCOVA results.)

Our second planned comparison was that participants in the *Private Lives* condition would outperform those in the Brochures condition B irrespective of those in the wait-list control group. The multivariate effect for this contrast was also significant, $F(2, 108) = 6.79, p < .00$. Further examination revealed that those trainees in the *Private Lives* condition outperformed those in the Brochures condition on HIV/STI Knowledge $F(1, 109) = 13.40, p < .00$. There was no significant difference between the groups on the Condom Attitudes measure. (See Appendix D, Tables 2 and 3.)

To test for differential effectiveness, we examined the significance of an interaction between initial level of risk (as measured by the Personal Stuff questionnaire) and group status on the two dependent measures. A significant interaction here would indicate that the effectiveness of the intervention *depends* on a participant's score on the measure of risky sexual behavior. We found that the multivariate interaction effect of these two variables was non-significant, $F(16, 166) = 0.68, p > .05$, indicating that our previous findings about intervention effectiveness hold true regardless of participants' risk status.

Our final analyses examined the user satisfaction data to evaluate the differences in mean satisfaction ratings between the two intervention groups. Using a one-way, multivariate analysis of variance (MANOVA), we found no significant differences between the groups in either average user satisfaction ratings or overall ratings of the programs, $F(2, 73) = 0.01, p > .05$. (See Appendix D, Tables 2 and 4, for mean user satisfaction ratings.)

Discussion

The approach on Vstreet represents a technological breakthrough to teaching life skills and sustaining communication with at-risk teens. Until recently, limitations in Internet transmission speed made it impractical to use animated audio-visual material over the Web. However, the proliferation of high-speed connections through cable modems, DSL (digital subscriber lines), fiber optic lines, and direct cable connections (T1 and T3 lines) has begun to remove these restrictions. Vstreet takes advantage of the Web's multimedia capabilities by presenting a highly visual learning environment designed to meet the needs and preferences of at-risk youth.

Development of Vstreet began in Phase I and continued in Phase II. The main focus of the Phase II study was to evaluate a full-length life skills curriculum developed for the site. The unit, which provided information on safer sexual practices, used sophisticated story animation with sound to model practical ways in which teens navigate through the world of sexual relationships. Our findings showed that the approach was very effective in improving trainees' knowledge of safer sexual behavior and their attitudes and confidence with using condoms. In developing the questionnaires, we were careful to minimize potential threats to reliability by creating items with simple language and response options presented in a visually-enhanced format. Test-retest and internal consistency reliability checks on these measures were, in fact, positive, adding considerable confidence to these findings. In addition, youth in the *Private Lives* intervention group gave the curriculum an overall satisfaction rating of nearly 8 on a 10-point scale (where 10 is the highest score).

Conclusions drawn from these findings should take into account several limitations of our study. In spite of the strength of our findings on life skills improvements, our measures were cognitively based, which is a critical step short of the actual behaviors. We chose this strategy because it seemed more appropriate to expect changes in knowledge and attitudes than in behavior, given the relatively short duration of the intervention. Unfortunately, it didn't turn out to be feasible to assess longer-term behavioral outcomes in Phase II as originally planned.

With the development of new content and features in Phase II, as well as the enhancement of existing features, Vstreet has come a long way since its official launch in early 2002. The breadth and depth of the content on the site has expanded considerably. For example, in addition to the *Private Lives* curriculum, there are now full-length life skills curriculums on food and nutrition, buying a used car, managing money, and searching for a job. The number of issues of *Getting Ready*, the life skills e-zine, has doubled. The look and feel and functionality of many of the features have been continually refined. Agencies comprise user groups specific to their type of service and locale, allowing for chats, the bulletin board, and other features to exist only within the province of particular user groups. Vstreet has other valuable features, such as a personal journal and an ongoing soap opera featuring a cast of virtual teens who live on Vstreet. A recent addition to the site is *Career Spins*, a comprehensive career guidance system to help at-risk teens assess their interests and preferences and to begin their search for meaningful life work. It is anticipated that further development of that system will continue under another Phase II SBIR grant.

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APPENDIX A

PRIVATE LIVES CURRICULUM ON CD-ROM

APPENDIX B

COMPARISON GROUP BROCHURES

APPENDIX C

MEASURES

APPENDIX D

TABLES



Figure 1. V-Room on Vstreet.com.



Figure 2. Private Lives Curriculum.