

STRATEGIES FOR ENHANCING THE ADOPTION OF SCHOOL-BASED PREVENTION PROGRAMS: LESSONS LEARNED FROM THE BLUEPRINTS FOR VIOLENCE PREVENTION REPLICATIONS OF THE LIFE SKILLS TRAINING PROGRAM

Abigail A. Fagan
University of Queensland

Sharon Mihalic
Center for the Study and Prevention of Violence, Boulder, Colorado

Widespread implementation of effective programs is unlikely to affect the incidence of violent crime unless there is careful attention given to the quality of implementation, including identification of the problems associated with the process of implementation and strategies for overcoming these obstacles. Here we describe the results of a process evaluation focused on discovering common implementation obstacles faced by schools implementing the Life Skills Training (LST) drug prevention program. The evaluation was conducted by the Center for the Study and Prevention of Violence (CSPV) under the Blueprints for Violence Prevention Initiative in conjunction with the designer of the LST program, Dr. Gilbert Botvin and his dissemination agency, National Health Promotion Associates (NHPA), and was funded by the Office of Juvenile Justice and Delinquency Prevention (OJJDP).

Support for this project was provided by the Office of Juvenile Justice and Delinquency Prevention through grants #98-DR-FX-001 and #2000-DR-FX-K001. The authors also wish to acknowledge the hard work and dedication demonstrated by all the members of the research team involved in this project. Correspondence to: Sharon Mihalic, Center for the Study and Prevention of Violence, Boulder, CO 80309. E-mail: sharon.mihalic@colorado.edu

This evaluation revealed that the 70 sites involved in the project faced many obstacles when implementing this science-based program in the "real" classroom setting, outside the rigorous controls of a research trial. Nonetheless, the schools were very successful in delivering the program in its entirety and with a high level of fidelity to the program model, and we attribute much of this success to the high level of independent monitoring provided by CSPV, as well as our ongoing efforts to work with schools to identify and overcome problems associated with implementation.

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There has been much success in the last decade in identifying and diffusing effective delinquency and crime prevention programs. The emphasis on research-based practices has encouraged communities to search for the best practices and determine the types of programs that would be most effective and appropriate for their problems and population. The Blueprints programs, identified by the Center for the Study and Prevention of Violence (CSPV), are 11 model programs that meet high scientific standards of demonstrated effectiveness that justify widespread replication (Cohen & Joe, 2001). Although such programs are ready for "scaling up," what remains to be examined are the common problems faced when implementing in "real" settings, outside the rigorous controls of research trials.

The Blueprints Initiative, funded by the Office of Juvenile Justice and Delinquency Prevention, was specifically intended to examine such issues, through replication of the Blueprints programs in multiple settings. In this article we describe the results of a process evaluation of a large-scale replication of one of the Blueprints programs, the Life Skills Training (LST) school-based drug prevention program. Consistent with the goals of the larger project, the process evaluation was intended to advance knowledge of the factors that lead to successful implementation in naturalistic settings, by helping implementing sites maintain program fidelity and providing them with feedback regarding obstacles encountered.

WHY STUDY IMPLEMENTATION?

Much attention has focused on identifying effective research-based programs. In contrast, there has been much less awareness of the factors needed to successfully implement such programs, even though successful implementation is not guaranteed by adopting a best practices program. Instead, many science-based programs have been adopted in different settings with widely varying outcomes. Likewise, while programs are often thought of as a uniform set of elements that are provided to clients in a consistent manner, there can be great variability in the manner in which programs are delivered (Durlak, 1998). For example, it is likely that adopting sites will vary in their level of support from key staff; organizational capacity to plan for and support the program; and availability of capable, trained staff to conduct the program; and deficits in these areas may undermine program effectiveness.

Although schools have become a primary locus of prevention efforts, largely due to their ready delivery system and population base of participants (i.e., students), the National Study of Delinquency Prevention in Schools recently concluded that the quality of school prevention activities is generally poor, and prevention activities are

not being implemented with sufficient strength and fidelity to produce a measurable difference in the desired outcomes (Gottfredson, Gottfredson, & Czeh, 2000). Furman and colleagues note that it is quite common for 25% or more of teachers to be nonusers of a required innovation, and among those who implement a program, there is marked variation in how well they implement it (Furman, Giberson, White, Gravin, & Wehner, 1989). This variability is very likely to increase as programs are taken to scale and widely disseminated (Fagan, 1990; McGrew, Bond, Dietzen, & Salyers, 1994).

These types of findings highlight the need for greater attention to the quality of implementation (also referred to as treatment adherence, fidelity or integrity), particularly as identified through process evaluations that describe and document how well a program is being implemented in comparison with the program's stated intent and identify the characteristics that increase or decrease the likelihood of success. Although important, program implementation has been relatively neglected in the prevention research literature (Dane & Schneider, 1998; Domitrovich & Greenberg, 2000; Gresham, Cohen, Rosenblum, Gansle, & Noell, 1993; Leff, Power, Manz, Costigan, & Nabors, 2001). In a review of over 1200 published prevention studies, only 5% provided data on implementation (Durlak, 1997). Particularly lacking is information regarding factors that lead to successful or unsuccessful program adoption, implementation, and institutionalization (Morrisey et al., 1997; Wandersman et al., 1998; Weissberg et al., 1991); as well as formal study of intervention diffusion strategies (Backer, David, & Soucy, 1995).

Nonetheless, prevention research is increasingly recognizing the need for studying program implementation (Backer et al., 1995; Rogers, 1962, 1995), and some factors necessary for successful replication have been identified, primarily from qualitative studies. Important factors include support and commitment from administrative and implementing staff; effective and widespread training for individuals charged with delivering the program; specific characteristics of the program itself, such as having a clear rationale and standardized activities; and successful integration into the adopting agency.

FACTORS THAT ENHANCE IMPLEMENTATION SUCCESS

Active Support of Key Participants

Project directors or coordinators. The project director or coordinator champions the innovation and guides its daily operations. Based on case studies of criminal justice innovations, Ellickson and Petersilia (1983) demonstrate that 90% of the most effective projects had highly committed project directors, while low commitment was associated with low success. In school prevention efforts, it is important to have a program coordinator who works in the school, or a committee that advocates for the program and identifies and resolves daily problems (Farrell, Meyer, Kung, & Sullivan, 2001; Gager & Elias, 1997; Gottfredson & Gottfredson, 2002; Kramer, Laumann, & Brunson, 2000). It is also essential that the program coordinator have the necessary time to devote to program operations (Kramer et al., 2000).

Administrators and principals. Programs are most successful when administrators show support and encourage cooperation and coordination (Dunworth, Mills, Corder, & Greene, 1999; Gager & Elias, 1997; Petersilia, 1990). Administrative leadership is

demonstrated in priority setting, resource allocation, scheduling, and social leadership. A good leader maintains a clear vision of the goals of the program, moves the program forward, and communicates with staff the need to embrace the values and ideals of the new program. Within schools, programs require the approval of school boards, superintendents, and central administrations, but success hinges upon principals who facilitate implementation and exert strong continuous pressure for implementation (Gingiss, 1992; Gottfredson and Gottfredson, 2002; McMahon, Ward, Pruett, Davidson, & Griffith, 2000). Even in the presence of a strong leader, a program may not survive if the principal is not supportive (Kramer et al., 2000).

Teachers. Although program adoption decisions are made at an administrative level, teachers are the primary agents of school-based prevention efforts, and their support, motivation, and “buy-in” is crucial to implementation success (Hunter, Elias, & 2001). Because programs compete with class time and academic demands, teachers must be convinced of the utility of the program; otherwise, they may fail to fully implement the program or even implement it at all (Elias & Clabby, 1992; Taggart, Bush, Zuckerman, & Theiss, 1990). Likewise, success is fostered if teachers have a high, shared morale, good communication, and a sense of ownership for the program (Gager and Elias, 1997; Petersilia, 1990).

Training. Training is needed to provide the knowledge, skills, and desire to successfully implement programs (Fors & Doster, 1985; Gager & Elias, 1997; Gottfredson and Gottfredson, 2002; Hunter et al., 2001; Perry, Murray, & Griffin, 1990). Beyond the basic goals of transferring knowledge regarding program operation, effectiveness, and delivery, training sessions help decrease resistance and generate enthusiasm and commitment to the program, all of which are necessary for success. The most successful trainings are those with knowledgeable and enthusiastic trainers, as well as support and attendance by site administrators. Several studies have demonstrated a relationship between teacher training and program success (Flay, 1999), with trained teachers more likely to fully implement a program and implement with greater fidelity (Connell, Turner, & Mason, 1985; Fors and Doster, 1985; McCormick, Steckler, & McLeroy, 1995), and achieve better student outcomes (Parcel et al., 1991; Ross, Luepker, Nelson, Saavedra, & Hubbard, 1991; Taggart et al., 1990), compared to untrained teachers.

It is important to provide retraining in subsequent years to ensure continued program involvement and rekindle commitment (Gager and Elias, 1997; Gingiss, 1992). Without support over time, implementers may stop using a program or fail to fully deliver it (Gingiss, 1992). Likewise, some may deviate from the intended program, and additional training and corrective feedback could encourage these implementers to get back “on course” (Parcel et al., 1991). Even after adequate training is conducted, staff turnover may threaten implementation fidelity if untrained teachers, aides, and health prevention specialists begin delivering the program (Lynch, Geller, Hunt, Galano, & Dubas, 1998).

Program features. Specific program features, such as complexity and structure, can impact implementation (Blakely et al., 1987; Ellickson and Petersilia, 1983; Gottfredson and Gottfredson, 2002; Petersilia, 1990). Clarity of goals and specific program procedures are necessary and must be easy to understand. Having a set curriculum with activities that are viewed as relevant, attractive, and easy to use also enhances

program adoption (Perry et al., 1990; Taggart et al., 1990), helps provide a clear program structure, and may reduce deviations from the intended content.

Integration. According to Gager and Elias (1997), new programs must be linked to schools' stated goals. Program integration cannot occur unless members of the school or community are receptive to new innovations (Gendreau, Goggin, & Smith, 1999; Kramer et al., 2000), and time should be spent fostering agreement regarding the need for the program and involving community members in planning processes (Fullan, 1992). Integration is also enhanced by giving programs high visibility and allotting them regular time schedules (Gager and Elias, 1997).

THE CURRENT STUDY

The current study reviews the results of a process evaluation of the Life Skills Training (LST) program, as conducted by the Center for the Study and Prevention of Violence (CSPV), in conjunction with the designer of the LST program, Dr. Gilbert Botvin, and his dissemination agency, National Health Promotion Associates (NHPA). The LST Program is a school-based, universal program designed to prevent tobacco, alcohol, and other drug use among middle and junior high school students. The 3-year program includes self-management (e.g., decision-making) and social (e.g., communication) skills, as well as drug-related information and skills to increase drug resistance. Lessons are generally taught by classroom teachers, using a variety of teaching techniques, such as instruction, demonstration, practice, feedback, and reinforcement. Research trials have demonstrated that the program reduces tobacco, alcohol, and marijuana use up to 80% with effects sustained through high school and demonstrated for adolescents of varying socioeconomic status and race/ethnicity (Botvin, Mihalic, & Grotper, 1998).

Procedure

The LST initiative provided participating schools with all materials, training, and technical assistance needed to replicate the program. Site selection was staggered over 2 years, with 35 sites chosen to participate in the study during the first year of the project (Group One schools), and an additional 35 chosen in the second year (Group Two schools).¹ The final sample included 70 sites, comprising 292 schools and approximately 130,000 students receiving the 3-year curriculum. The sites varied in size, with some containing only one school, and others containing multiple schools in multiple districts. Schools were located in urban, suburban, and rural areas and serviced students of varying socioeconomic status and racial/ethnic backgrounds.

Based upon the program model, all sixth- or seventh-grade students (depending on the school structure) received 15 LST lessons in their first year of implementation (Level One), with sessions generally lasting 50 minutes and taught one to five times per week. In the second year of implementation, these students received 10 booster sessions (Level Two), while an incoming cohort of sixth- or seventh-grade students received the Level One curriculum. In the third year of implementation, eighth- or

¹An additional 35 sites were chosen in the third year of the project, but data was not yet available to include in this analysis.

Table 1. Schedule of Implementation for Group One and Group Two Schools

	1999–2000	2000–2001	2001–2002	2002–2003
Group One	L1 ¹	L2 ² L1 (new cohort)	L3 ³ L2 L1 (new cohort)	N/a
Group Two	N/a	L1	L2 L1 (new cohort)	L3 L2 L1 (new cohort)

¹Level One: 15 sessions, taught to 6th or 7th grade students

²Level Two: 10 sessions, taught to 7th or 8th grade students

³Level Three: 5 session, taught to 8th or 9th grade students

ninth-grade students received five booster sessions (Level Three), seventh- or eighth-grade students received the Level Two curriculum, and an incoming cohort of sixth- or seventh-grade students received the Level One curriculum. Group One schools initiated Level One in the 1999–2000 school year, while Group Two schools began during the 2000–2001 school year (see Table 1).

Process Evaluation

The process evaluation conducted by CSPV was aimed at (a) ensuring that schools taught the program in its entirety and with a high level of fidelity to the core components of the program; (b) identifying the problems encountered during replication; and (c) working with schools to implement solutions to these problems. Our primary goal was to ensure that schools implemented at least 60% of the LST curriculum (i.e., a 60% implementation rate), as this was the threshold identified in research trials as necessary to achieve reductions in substance use (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Botvin, Baker, Dusenbury, Tortu, & Botvi, 1990). Additionally, we wanted to identify obstacles to program success and help schools overcome these problems, not only to improve implementation fidelity during our project, but also to increase the likelihood that the program would become institutionalized and could be sustained when the initiative ended.

Although we wished to ensure a very high level of monitoring, we also wanted to preserve the “natural” school setting and did not want to overwhelm participants. Thus, we relied on information from multiple sources and utilized both quantitative and qualitative assessments, as described below:

Application. Applications asked for details regarding program implementation, including the subject in which the program was to be taught, class size, names of instructors, timelines, and so on. Written letters of commitment from school principals and superintendents were also required.

Feasibility visit. Two- to three-hour feasibility visits were conducted by CSPV and NHPA representatives at each of the 70 sites prior to site selection, to verify application information; explain the requirements of the program and process evaluation; assess the motivation and commitment of key parties, as well as their ability to replicate the

program with fidelity; and answer questions and concerns. We required attendance from local coordinators, school principals, and at least one teacher representative from each school.

Local coordinators. Each site nominated a local coordinator to help arrange teacher training workshops, collect implementation schedules, and keep CSPV and NHPA informed of problems.

Teacher training workshops. Each site received a 2-day training workshop in the first year of implementation, and a 1- or 2-day workshop in the second and third years, to familiarize staff with the program rationale and the key components of each lesson. Training was required for LST instructors and encouraged for school administrators and local coordinators. Trainers and participants completed feedback forms, rating the quality of the workshop and noting problems or concerns.

Classroom observers. The Center for the Study and Prevention of Violence hired and monitored local consultants at each site to assess the rate of implementation fidelity, or the extent to which teachers delivered the LST curriculum. Observers were to attend 4 (26%) of the 15 classroom sessions taught by each LST instructor during the first year of implementation, 3 (30%) sessions in Year Two, and 2 (40%) sessions in Year Three. They were given standardized checklists used during LST research trials, which listed the main points and activities of each lesson, and they completed the forms during lessons and indicated which items were achieved.² Observers were also asked to rate the percentage of time teachers used interactive instructional techniques, student behavior (on a five-point scale), and were encouraged to provide qualitative information regarding deviations from the curriculum, class size, and so on. The consultants attended local training workshops to meet instructors and learn about the curriculum, but they were asked not to inform instructors prior to attending classes and not to contribute to class sessions in any manner, so that lessons were as “natural” as possible.

Teacher assessments. Life skills training instructors completed feedback forms upon finishing the program, indicating the number of lessons taught, whether or not they added material to the curriculum, student response, overall ratings of the program, whether they would recommend the program to others, and other quantitative and qualitative information.

On-site visits. The Center for the Study and Prevention of Violence representatives visited each site at least once each year to conduct semistructured interviews with local coordinators, school administrators, LST instructors, and classroom observers. Interviews focused on the process of implementation, attitudes toward the program, problems encountered, and solutions achieved. The Center for the Study and Prevention of Violence representatives also attended LST sessions to assess teacher performance and verify information from classroom observers.

²Thus, if an instructor delivered 10 of the 20 main points, the implementation rate for the lesson was 50%.

Table 2. Implementation Fidelity Scores

	1999–2000			2000–2001		
	<i>Level</i>	<i>Mean</i>	<i>Range</i>	<i>Level</i>	<i>Mean</i>	<i>Range</i>
Group One	One	81%	0–100%	One Two	85% 84%	20–100% 4–100%
Group Two		N/a		One	86%	9–100%

Technical assistance (TA). Schools could request phone, email, or on-site technical assistance from NHPA trainers throughout the project. Trainers documented TA by detailing the nature of the problem and services provided.

Written reports. At the end of each program year, CSPV provided each school with information regarding implementation across all sites and a site-specific report, detailing the site's progress, obstacles faced and overcome, and recommendations for improvement.

RESULTS

The process evaluation results are based upon data collected at all 70 replication sites, from 2 years of implementation. Group One sites had taught the Level One and Two curricula by the end of the 2000–2001 school year, while Group Two sites had completed only Level One. (See Table 1.) While the majority of findings are based on descriptive data from observer and teacher reports, we also present Pearson correlation coefficients between implementation factors and sites' overall implementation rate, derived from the classroom observers' checklists.

Implementation Fidelity

Overall, the replication sites were very successful in implementing the LST program. While three site failures occurred during the first 2 years of the initiative (for reasons explained below), these involved only 4 of the 292 participating schools, a small loss considering the scope of the project. Moreover, the sites that remained in the study well exceeded our primary project objective of delivering at least 60% of the LST curriculum.

During the first year of the initiative, observer reports demonstrated that instructors from Group One schools had an average implementation rate of 81%, indicating that they taught 81% of the required points of each lesson in the curriculum (see Table 2).³ While the scores ranged from 0 to 100%, only 17% of the observations showed implementation scores below 60%, and 34% indicated that all the required points of each lesson were taught (i.e., an implementation rate of 100%). This information

³To ensure that information from observers was accurate, CSPV representatives completed checklists of lessons with nearly every observer. In the first year of replication, observers and CSPV representatives reported the same teacher implementation score in 83% of cases. In year two, the scores matched for 89% of observations in Group One schools, and 92% of observations in Group Two schools.

was based on data from 44 observers, who completed 918 observations of 289 teachers, or 3.2 observations per teacher.

Implementation scores were even higher in the second year of the project. For Group One schools, the average implementation rate was 85% for the Level One curriculum, and 84% for the Level Two curriculum, as based on information from 59 observers, who completed 985 observations of 501 teachers (an average of 2.0 observations per teacher). As before, only a small proportion of reports (10% for Level One and 12% for Level Two) indicated scores below 60%, while approximately one third (35%) of Level One reports and 45% of Level Two reports demonstrated that all points of the curriculum were taught. Instructors at Group Two schools showed an equally high rate of implementation fidelity. According to information from 58 observers, who completed 906 reports of 283 teachers (3.2 per teacher), instructors had an average implementation score of 86% for the Level One curriculum. Moreover, only 9% of reports indicated that teachers failed to cover 60% of the curriculum, and 36% of reports had implementation rates of 100%. (See Table 2.) To summarize, across both groups of schools, time periods, and levels of implementation, average implementation scores ranged from 81 to 86%; only 9 to 17% of the reports indicated rates below 60%; and 34 to 45% demonstrated an implementation rate of 100%.

Implementation rates were thus not only high, but also increased between the first and second years of implementation for Group One schools, and between Group One and Group Two schools. While improvement for Group One schools may be due to teachers' greater familiarity with the curriculum and the project as a whole, we also attribute part of the improvement to our efforts in working with schools to identify and overcome obstacles related to fidelity. Likewise, the higher implementation rates of the Group Two schools (in the second year of the initiative) may reflect our ability to share information gleaned during the first year of the project, to identify potential replication problems, and suggest strategies for avoiding these obstacles before these schools began implementation.

Teacher Reaction

In addition to teaching the majority of the curriculum, LST instructors were very positive about the program, as reported in yearly feedback forms. For Group One schools, feedback forms were received from 202 (70% of all instructors) instructors in Year One and 285 (57%) instructors in Year Two, while 215 (76%) teachers at Group Two schools completed feedback forms.⁴ Across all schools and program years, teachers rated the overall quality of the program as "good" to "very good" (an average score of 3.6 on a 5-point scale, as all ratings are unless otherwise noted). Similar scores were reported regarding the program's effectiveness (3.4), ease of implementation (3.7) and quality of materials (3.6). In addition, the majority (84%) of LST instructors reported they would recommend the program to other teachers.

Student Reaction

Information regarding students' reaction to the program was obtained from classroom observers and teacher reports. The observer reports indicated that student response

⁴Teachers with lower levels of support for the LST program may not have returned evaluations. As a result, information based on teacher feedback forms may be somewhat skewed in favor of the program.

was high (an average score of 4.0). Likewise, instructors stated that nearly all (91%) students participated in the lessons, and student behavior was between good and very good (3.4). However, between one third and one half (33 to 55%) of teachers felt that students were bored during at least some of the lessons, and some instructors commented that these lessons were less effective.

Administrator Reaction

School administrators were generally positive about the program. Although they did not complete written evaluations, many stated during interviews that they were pleased with the implementation, felt the curriculum was having a positive effect, and hoped to continue the program after the grant ended. In addition, teacher feedback forms indicated that school administrators were very supportive of the program (a rating of 4.2).

Factors Related to Implementation Quality

Despite this success and positive feedback, the 70 sites nonetheless encountered a range of obstacles, to varying degrees, during replication. Many of these factors has been identified by other researchers. Unlike past research, however, our initiative was aimed at identifying such barriers and generating solutions to them, and we believe this work improved implementation fidelity in our project.

Support and enthusiasm from key participants. Initial and sustained commitment was needed on multiple levels, including site coordinators, school administrators, and LST instructors. We devised many strategies to assess and increase participant enthusiasm, beginning with the on-site feasibility visits. Although all applicants professed a great desire to replicate the LST program, we required face-to-face meetings with all participants to assess whether or not support was widespread. The meetings allowed participants to discuss their concerns, identify potential replication problems, and brainstorm ways to avoid them, and these discussions usually fostered a common sense of obligation to meet project requirements. The visits were especially important in bolstering support from teachers, who are often left out of decision-making processes. Having the NHPA representatives describe the curriculum and address teachers' concerns was vital, as they had typically taught the program many times and were likely to be viewed as credible by teachers.

When support for the initiative was clearly lacking at the feasibility visit (e.g., if participants did not attend), we generally asked schools to withdraw from the project. When the level of support was questionable, we required the site to engender additional commitment; for example, by holding follow-up meetings and having participants sign letters of commitment pledging support.

Champions and local coordinators. Sites with high levels of commitment from the onset were generally those with a program "champion," particularly when champions also acted as on-site coordinators. Such staff was an integral and active part of the replication process, fostering communication between participants, serving as a base of support for instructors, and providing us with information regarding implementation. Given the scope and longevity of our replication effort, as well as our status as "outsiders," it was often very difficult for us to communicate with participants and

learn about implementation problems, and we heavily relied on the on-site coordinators to perform these tasks.

Sites with strong local coordinators generally experienced few problems during implementation, even in large sites requiring much management. Our rating of the site coordinator (assessed by CSPV staff) was significantly correlated with sites' implementation score ($r = 0.26$), with better coordinators associated with higher rates of implementation. In general, effective site coordinators devoted much time to the project and had a natural interest in it. Many such leaders were also Safe and Drug Free School coordinators, and, in a few sites, coordinators were certified LST trainers who provided ongoing feedback and support to teachers. Poor coordinators likely negatively affected implementation scores because when they failed to fulfill their duties, we could not effectively identify problems or help schools overcome them. In some cases, coordinators had no visible interest in the LST program and routinely refused to return phone calls or complete necessary forms. While we could not "fire" poor local coordinators, we urged them to nominate replacements or assistants, or, if this strategy failed, we relied more heavily on individuals at the school to obtain information.

Even if local coordinators were supportive of the program, their position within the school system affected their ability to achieve results. School district personnel were often too far removed from the classroom to effectively communicate with LST instructors, who often resented their oversight. Conversely, coordinators who lacked authority (e.g., classroom teachers) could experience problems ensuring full attendance and substitute coverage at training workshops or scheduling the curriculum, as these decisions need approval from school administrators.

Principals and school administrators. Strong support was also needed from school principals and administrators, not only to agree to adopt the program, but also to integrate the curriculum into the school schedule and help ensure that lessons were taught. Active administrators also explained the grant to teachers and elicited their support prior to implementation, attended teacher training workshops, observed lessons, kept informed of implementation progress, and even co-taught classes.

Although prior literature indicates that principal support affects program success (Gingiss, 1992; Gottfredson and Gottfredson, 2002; McMahan et al., 2000), our measure of administrator support was not significantly correlated with sites' overall implementation scores. However, the measure was based on teacher feedback forms indicating support from school administrators and did not directly assess principal buy-in. It is also possible that because CSPV and local coordinators played an active role in monitoring implementation and ensuring fidelity, principal support was less important in this initiative than in other projects. In the absence of strong, external monitoring, however, principal support may be more likely to influence program success, as well as affect program sustainability.

Despite the lack of association between administrator support and implementation score, some school administrators failed to support their schools' replication of the LST program, and lack of principal support contributed to all three of our failed sites. In many schools, principals felt pressure to increase students' academic performance, and monitoring LST implementation was not a priority for them. In addition, principals often did not establish a good rapport with their teachers or solicit their feedback about the initiative, which could lead to dissatisfaction among instructors. In two failed sites, outside prevention agencies had coordinated the project and provided

LST instructors, but had not engendered full support from administrators. As a result, when they were unable to continue teaching the program, principals refused to take on the burden. In a third failed site, the school could not find a suitable subject in which to teach the curriculum, and the principal was unwilling to make room in the school schedule for the program.

We tried very hard to foster enthusiasm and support from administrators throughout the project. We not only required principals to sign letters of commitment as part of the application process, but also met with them during the feasibility and implementation visits to discuss the goals of the project and encourage them to take an active interest in the initiative.

Life skills training instructors. Although we anticipated that program success would depend upon support from LST instructors, our measure of teacher commitment (i.e., overall rating of the program) was uncorrelated with implementation scores.⁵ It is possible that some teachers effectively delivered the curriculum even when unsupportive. In fact, we occasionally observed successful classes, yet later heard from teachers that they did not want to teach the curriculum, because they were excluded from their school's decision to adopt the program, or were overwhelmed with other obligations. There were strong, positive associations between reports of teaching all the lessons in the curriculum and teachers' overall ratings of the program (correlation of 0.25) and quality of materials (0.41). During interviews, we learned that some instructors who did not want to teach the program deleted material, either to save time or because they thought the material was inappropriate or unnecessary.

Teachers' lack of support also affected student response, with strong associations between teachers' overall rating of the program and student behavior (0.60) and boredom (−0.53). Several classroom observers reported LST instructors informing students that they had to "get through" LST lessons before they could begin other (more exciting) work. Not surprisingly, students in these classrooms tended to be uninvolved and disruptive. In other sites, classroom teachers were observed reading newspapers or paying bills, while instructors from outside prevention agencies taught lessons, and students typically responded in kind, with boredom and restlessness.

Instructors' buy-in also contributed to the first two site failures described above. Not only were principals reluctant to take over replication when the outside agencies withdrew, but teachers were even more vocal in their refusal to do so. In both sites, instructors stated that they would replace LST with another drug prevention program.

Because it was extremely difficult to garner support from teachers once implementation began, we assessed teacher commitment at the feasibility visit, and NHPA trainers fostered enthusiasm at training. During implementation, we met with teachers to obtain their feedback and encouraged those with problems to utilize technical assistance from trainers. In site visits and year-end reports, we encouraged coordinators and school administrators to foster teacher support by scheduling regular meetings with staff; provide guidance counselors or others to co-teach lessons if teachers requested such assistance; and hold year-end teacher feedback sessions.

Teacher training workshops. Teacher training workshops familiarize participants with the philosophy and content of the curriculum, review teaching strategies, emphasize the

⁵It should be acknowledged that teachers with lower levels of program support may not have completed feedback forms, thereby decreasing the likelihood of finding a significant association.

need for fidelity, and generate enthusiasm. Although we required all LST instructors to attend workshops, absenteeism often occurred. When absences signaled a clear lack of commitment from the site (e.g., if all teachers from a school were missing), we asked the school(s) to withdraw from the project. In other cases, absenteeism stemmed from district decisions, such as failing to provide substitute teachers or scheduling other required training workshops on the same day. If we felt these problems were due to miscommunication rather than lack of support, we allowed instructors to attend other training workshops or rescheduled the training. However, doing so generally slowed implementation.

Staff turnover after training was also problematic, particularly when sites failed to inform us that teachers had left and allowed untrained instructors to deliver the lessons, or simply did not deliver the program to students. These situations were rare, but untrained teachers were often observed to have lower levels of support for the program and a greater likelihood of deviating from the curriculum, as they did not understand the need for fidelity. While some schools were able to cover teacher turnover with other trained teachers, others needed additional training, which again, slowed implementation. Make-up sessions were also typically shorter and involved fewer participants, which resulted in less opportunity for discussion and practice.

We tried to minimize absenteeism and turnover by encouraging training to be scheduled for times that would best ensure full attendance and substitute coverage. We also encouraged schools to send additional staff to training, who could act as replacement teachers if turnover occurred. Finally, we urged observers and coordinators to immediately inform us of turnover, so that we could begin to resolve the problem.

Integration into the school system. Schools often faced great challenges when scheduling the program. Although we allowed the program to be taught in any subject, we required that the course be given to all students, and that the class length and size allow for effective instruction (e.g., we recommended that classes be at least 45 minutes and less than 35 students). We urged schools to think about scheduling issues early on, required detailed implementation plans in the application, and verified this information at feasibility visits. If plans were not appropriate, schools had to make changes before admitted to the project. Although this level of monitoring may have felt intrusive, we felt that successful integration into the school schedule was critical not only to ensure that the program was actually implemented during our initiative, but also to institutionalize the program so that it would continue after the grant ended.

The most common barrier to integration was that teachers and administrators did not want to take time away from “core” academic subjects, yet did not have any other subject in which to teach the program. When LST was placed into an elective class or physical education, students were unhappy that their “free time” was taken away. In fact, implementing during physical education was negatively related to student participation (-0.23), while teaching during health was positively correlated (0.15). Physical education classes also tended to be very large, which impeded class discussions or behavioral rehearsal strategies (two key components of the curriculum); such courses were positively associated with lecturing (0.21), while health classes involved more discussions (0.20). Teaching during physical education often meant that LST classes were held in the gymnasium, without adequate classroom facilities (i.e., desks, chairs, or blackboards), and while other students received P.E., both of which impeded teachers’ and students’ performance.

Implementation problems and lack of support also occurred when the curriculum overlapped with other programs. In such cases, instructors asserted that LST was very boring for students, as they had already received similar information. We also worried that instructors would eliminate lessons or concepts from the LST curriculum that had been taught in other classes. We tried to avoid this issue by inquiring about program overlap in the application and at feasibility visits and asking schools to eliminate duplicate programs or information, or at least teach overlapping information at different times in the school year.

Although it was not easy to integrate the program into the school curriculum, many sites were able to successfully do so, particularly if they were already teaching similar information and could replace the material with LST. Several sites matched the LST program with their curriculum requirements and usually found that the program fulfilled many goals, which typically increased support for the program from both teachers and administrators. We encouraged all schools to take similar steps, and we urged schools with problematic implementation plans to move LST into a different subject in the second year of the project.

Effective LST instructors. Teacher effectiveness in delivering the lessons and adhering to the program curriculum was also important for implementation success.

Classroom management skills. Classroom observers and instructors both noted the difficulty of managing student behavior when conducting the discussions and behavioral rehearsals (i.e., role-plays) integral to the curriculum. Although many teachers were excited to use interactive modes of instruction, others reverted to didactic strategies, even reading lessons directly from the manual. Somewhat ironically, correlation analyses indicated a positive association ($r = 0.16$, $p < 0.10$) between lecturing and implementation scores, likely because reading from manuals allowed greater coverage of material. Lecturing was associated with student boredom (0.36), worse student behavior (-0.16), and less student participation in lessons (-0.27); however, suggesting that even if instructors taught more material, students may not have truly learned or absorbed the content of the lessons.

Classroom management problems were encountered to some extent in nearly every school. While these difficulties typically did not result in serious problems, they often led to a lack of time in which to teach the lessons (as instructors spent too much time handling misbehavior), and to student boredom. Student misbehavior was especially difficult for instructors from outside prevention agencies, as they often did not know students and were unused to teaching a curriculum. Although some classroom teachers assisted prevention specialists with classroom management, others could even be disruptive themselves (as described previously). We tried to address these problems through training workshops and technical assistance, providing instruction in facilitating discussions and conducting behavioral rehearsals.

Teaching with fidelity. According to reports from classroom observers and teachers, some instructors deviated from the curriculum by supplementing lessons (i.e., adding videos, "scare tactics," or other activities) or deleting information, activities, or entire lessons. To their credit, many teachers believed that their changes would make the program more "real," interesting, or effective, but we suspect that instructors also deleted components they did not feel comfortable teaching. Many instructors also

informed us that they found the program guidelines too rigid and wanted more flexibility to deliver lessons.

We spent much time emphasizing the link between program fidelity and program success. During feasibility and implementation visits, and in year-end reports, we explained that the LST model had been proven effective *in its current form*, and that changing components could undermine the program's ability to reduce tobacco, alcohol, and drug use. We also encouraged teachers to discuss concerns with the NHPA trainers, who could suggest ways to maintain program fidelity while keeping students interested in the material.

While teachers reported deviations throughout the project, we feel our monitoring and emphasis on program adherence was somewhat successful in improving program fidelity. Implementation rates improved between the first and second program years, and teacher feedback forms indicated increased program fidelity over time. For Grant One schools, 84% of teachers reported teaching all LST lessons during the first year of implementation, compared to 88 to 94%⁶ of instructors in the second year, and 85% of instructors from Grant Two schools. Similarly, 37% of instructors in Grant One schools reported using "outside materials" (i.e., information or activities not included in the curriculum) during Year One, compared to 20 to 24% in Year Two and 21% in Grant Two schools.⁷

DISCUSSION

After 2 years of program implementation, the process evaluation of a large-scale replication of the LST drug prevention program demonstrated high rates of implementation success. Based on written feedback from classroom observers and LST instructors, as well as interviews with these parties, school administrators, and on-site coordinators, the results indicate that teachers delivered the majority of the lessons, in a manner consistent with the goals of the program, and with generally high levels of support from key participants.

Despite this success, we also identified problems encountered to varying degrees by schools implementing the program. Such obstacles included a lack of support from onsite coordinators, school administrators, and LST instructors; lack of attendance during training workshops; high teacher turnover; problems integrating the program into the school's infrastructure; and teacher deviation from the core curriculum. Our correlation analyses indicate the strongest association between having a strong, local coordinator and high implementation fidelity, and the contributions of program "champions" to program success have been noted by others (Ellickson and Petersilia, 1983; Farrell et al., 2001; Gager and Elias, 1997; Gottfredson and Gottfredson, 2002; Kramer et al., 2000). Unlike others, we did not find a significant association between principal or instructor support and level of implementation. Though these results may be due to limitations in our measures (particularly in asking teachers to rate both their own and their administrators' levels of support), the findings suggest that if teachers

⁶This range reflects reports from teachers delivering the Level One and Level Two curricula.

⁷These percentages may overestimate deviation and must be taken with caution. Teachers were asked to indicate whether or not they made changes to the curriculum and, if so, the changes made. Some teachers indicated changes but described "acceptable" additions, such as using overheads to define concepts or games to review information, and these were not coded as program deviations. Others indicated changes but did not describe them. While these changes were coded as deviations, a proportion may have been acceptable additions.

are told to implement a program, they may be able to deliver most of the major points of the curriculum even in the absence of strong support by administrators and their own "buy-in" for the program. In fact, we occasionally observed effective teachers who later reported that they did not like the curriculum. However, lack of teacher support was related to failure to implement all the lessons, poor classroom behavior, and student boredom. Thus, students with teachers unsupportive of LST may not have benefited as much from the lessons, and it is possible that an outcome evaluation would have failed to produce demonstrable change in student behavior. Likewise, our three failed sites had low levels of administrator and instructor support. These additional findings indicate that commitment from key parties is still important in program replication, and it must also be remembered that our project involved a high level of external monitoring (unlikely to be present in a more natural setting), which may have compensated for low internal support. It is also unlikely that a program will be sustained for long periods of time unless administrative support is present to build a foundation that will support training, technical assistance, the purchase of materials, and integration into the daily routine of the school.

Our work also highlights the unique challenges faced when implementing prevention programs in the school setting. Although an increasingly popular locus of intervention, schools have not been overly successful in their prevention efforts (Furman et al., 1989; Gottfredson et al., 2000), and this problem may worsen as schools face increasing teacher turnover and pressure to raise academic achievement. In our study, sites often had great difficulty ensuring full teacher attendance at training, either because teachers lacked motivation (financial or personal) to attend, or because they were re-assigned to other schools just prior to the start of the school year. Likewise, many sites suffered teacher turnover during the school year, which often delayed implementation and necessitated additional training. Our project required full training and covered training costs, but in unmonitored replication efforts, teacher turnover could very well result in untrained teachers delivering the program, threatening fidelity (Connell et al., 1985; Fors and Doster, 1985; McCormick et al., 1995; Parcel et al., 1991; Ross et al., 1991; Taggart et al., 1990); or, in the failure of the program to be implemented at all. Many schools faced additional challenges integrating the program into their infrastructure, as they did not want to take time away from academic subjects needed to raise achievement scores, but had no other free time in their schedules. Gager and Elias (1997) note the importance of integration for program success, and it is likely that many schools choose not to adopt prevention programs because they cannot make room for them.

In addition to providing much needed information regarding factors associated with program success, this project extends the field by identifying strategies to enhance factors related to successful program replication. For example, our recommendations for strengthening participant support include: using onsite feasibility visits to create group obligation to fulfill goals and encourage collaborative decision-making; meeting with administrators, local coordinators, and instructors during implementation to discuss the program and any problems that have arisen; and using yearly site reports to applaud progress and recommend strategies for enhancing teacher enthusiasm, such as including instructors in decision-making, holding regular feedback meetings, and encouraging instructors to utilize technical support. Our findings also suggest ways for improving teacher attendance at training workshops, achieving better integration of the program into the school system, and fostering fidelity to the curriculum.

In addition to helping our sites improve program fidelity, success, and sustainability, we hope these findings will be used by researchers and practitioners in their own process evaluations. Faced with increasing pressure to adopt research-based programs, as well as a growing list of successful programs from which to choose, communities are now facing the tough questions of how to mount successful replications in “real” settings, and we hope that these findings can help guide such decisions.

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