

## STEP Evaluation

The Statewide Tobacco Education Program (STEP) was created in response to an RFP from the Connecticut Department of Public Health soliciting organizations to create and implement innovative anti-tobacco efforts for Connecticut's youth aged 5-14 years. The idea behind STEP was to educate kids on a number of tobacco-related issues in engaging, hands-on ways, and in a variety of group settings, including summer camps and after school programs. East of the River Substance Action for Substance Abuse Elimination (ERASE) is one of 13 Regional Action Councils (RACs) in Connecticut. Staff at ERASE wrote the successful application to develop the STEP Program and to co-ordinate its implementation in RAC's throughout the state.

Early on, an educational specialist was hired to develop the curriculum which included visual learning aids and specific hands-on activities for the children to do to reinforce learning. A trainer's manual was developed that detailed the information that was to be covered and suggested activities that went along with them, including materials that would be needed and age-specific adaptations. The curriculum itself was organized around five content areas or modules:

1. **Introduction:** Knowledge of tobacco and tobacco products, health effects in general, harmful ingredients in tobacco;
2. **Environment and the Media:** Environmental effects of tobacco including the health effects of second hand smoke, advertising and tobacco marketers' strategies;
3. **Healthy vs. Unhealthy:** How tobacco affects the human body, including personal appearance, physical performance, and the brain;
4. **Cost & Choices:** Whether to smoke or not is a choice, how to make healthy choices, and the dollar cost of cigarettes;
5. **Dealing with Peer Pressure:** Awareness of peer pressure and techniques to handle it.

The implementation of the STEP program across Connecticut began in the summer of 2011 and continued through June 2013. Programs were rolled out in the context of many existing organizations, including public and private schools, town parks and recreation departments, YMCA's, boys and girls clubs, and non-profit agencies. The physical settings for the program implementations varied accordingly and included parks, traditional school classrooms, and a variety of large indoor spaces such as gymnasiums, cafeterias, lounges, and multi-purpose rooms housed within schools and community buildings.

As part of the evaluation process, pre/post questionnaires were developed, and staff at the RACs were required to administer these to all participants. The questionnaires were designed to assess participants' baseline knowledge and attitudes about tobacco use, and to capture any changes in knowledge or attitudes that may have been due to the program. The pre/post questionnaires included questions about the 5 topic areas covered in the curriculum, as well as demographic information and questions about parental involvement. The pre/post questionnaires were intentionally kept as short as possible. As a consequence, it was only possible have 2 or 3 questions that asked participants about each content area in the curriculum.

The pre and post questionnaires asked the children for 4 initials (the first two letters of their first name and the first two letters of last name) and their birthdate, with the aim to match records pre to post.

Recognizing the developmental and literacy range among children and youth aged 5 to 14 years; different versions of the questionnaire were designed for different age groups. A simplified version was given to children 7 years and younger. The wording of the questions was the same as it was on the questionnaires for the older children; it was simplified in the sense that there were fewer questions total (10) and the font was bigger. Similarly, in the pre/post questionnaire for children 8 and older, there was a set of 8 questions at the end answered only by children 10 or older. The additional questions for older youth cover personal history with tobacco use, two questions about the dangers of smoking, one about peer use, and one about perceived parental attitudes.

In addition to the pre/post questionnaires, program staff provided attendance sheets and other documentation about the program sessions.

After the programs were underway, additional reporting requirements from DPH were added, specifically, for ethnicity, whether the child lived with a smoker, and whether the child/youth had tried smoking themselves. Each of these was integrated into a revised version of attendance forms and/or the pre test instrument.

The results below show the information collected for the reporting requirements and the findings from the pre/post questionnaires. The results are divided into 3 sections. First is a general, overall picture of the data received: how many surveys were completed, how many could be matched, demographic information, etc. This section includes the reporting requirements for the Department of Public Health. The next section shows the findings from the surveys as they relate to the 5 topic areas covered in the curriculum. The third section has additional results, including findings on the youth’s perceptions of parental attitudes and program setting.

A one-tailed Fisher’s Exact test was used to determine statistical significance for pre and post differences among unmatched records. McNemar’s Chi Square was used to test significance for matched pairs.

## RESULTS

### I.) Overall Picture and Reporting Requirements

A total of 10 RAC’s completed the STEP Program and submitted evaluation materials to ERASE. 3651 pre and post questionnaires were received; of those, 87 were excluded due to respondent age, leaving 3564 that were included in the analysis. Of the 3564, 1864 were pre tests, and 1700 were post tests. 2242 could be matched using initials and birthdates, making 1121 pairs of pre-post records.

**Table 1. pre, posts, and pre-post pairs that could be matched**

Questionnaires	# Pre’s	# Post’s	Total
Matched	1121	1121	2242
Unmatched	743	579	1099
Total	1864	1700	3564

The attendance sheets and the pre test questionnaires both included questions about demographics, smoking history, and whether the child lived with a smoker. Table 2 below shows the source(s) for each type of information.

**Table 2. Sources of information**

	Attendance Sheet	Pre test
<i>n</i>	2185	1864
Name of Site	Yes	Yes
Enrollment Date	Yes	No
Participant Name	Initials only	Initials only
Participant ID	No	Yes
Participant Zip Code	Yes	No
Age	Yes	Yes
Sex	Yes	Yes
Ethnicity	Yes	No
Race choices	Yes	No
Race self-identification	Yes	No
Tobacco use	Yes	Yes
Live with smoker	Yes	Yes

**Age**

The STEP Program was created to use with children and youth aged 5 to 14. During the implementation of STEP, some programs included older youth as helpers or “counselors in training”. Some of the older youth filled out survey instruments; those are not included in this analysis. As mentioned above, it was recognized that kids aged 5 to 14 cover a wide range of development and literacy ability. Consequently, results throughout the evaluation are grouped by age group; specifically:

- 7 and younger
- 8 and 9 years old
- 10-12 years old
- 13-14 years old

**Table 3. Age groups and numbers of pre, posts, and pre-post pairs that could be matched**

Age	# Pre's	# Post's	# Matches
7 and under	233	175	25
8 and 9 year olds	471	423	298
10-12 year olds	912	792	618
13-16 year olds	238	211	179
missing	10	99	1
Total	1864	1700	1121

*note: even though there was a dedicated instrument for children 7 and younger, some programs gave the younger children the same instrument as the older children. The results are included; questions that were the same on both instruments are combined in the results. Initials and birthdates were not included on the younger version; hence all matched pair information comes from the longer version.*

### **Sex**

In terms of gender, the kids were split evenly, 51% boys and 49% girls.

### **Race and Ethnicity**

Since race and ethnicity information was missing for many participants, the percents shown below are from the pool of participants for whom any information was given.

**Table 4. Choose all that Apply...**

	<i>n not blank</i>	<i>% Yes</i>
Ethnicity: Hispanic	1541	22%
White	1584	74%
Black	1584	22%
Asian	1587	2%
American Ind/Alaskan	1596	3%
Hawaiian/ PI	1597	.8%

**Table 5. Which one of these groups best describes you?**

<i>n</i>	<i>1613</i>
White	69%
Black	20%
Asian	2%
Nat. American/Alaskan	2%
Nat. Hawaiian/ PI	.6%
Refused or don't know	6%

### **Language**

Fully one-quarter (25%) of the kids were bi-lingual. 71% reported speaking English, and 3% reported speaking another language only.

### **Living with a smoker**

A question asking whether the child lived with a smoker was added in to the pre test, as well as to the attendance sheet. 515 participants had either a 'yes' or 'no' recorded on the attendance sheet for whether they lived with a smoker. For those 515 participants, 339 or 34% reported living with a smoker and 176 or 66% reported not living with a smoker. The responses from the pre test showed similar results. There were 206 respondents who had a response to the question; of those 59 or 29% reported living with a smoker and 147 or 71% reported not.

## Tobacco Use

The vast majority of kids in the program denied ever having tried tobacco. The attendance sheets had responses for 1504 kids. Of those, only 20 (1.3%) reported having tried tobacco, and 5 (.3%) reported current use. Looking at just 13 and 14 year olds, 9 (4%) had tried tobacco and 4 (2%) use currently. The pre tests showed slightly higher rates, especially among older kids. For 10-12 year olds, there were 912 pre tests, showing that 16 kids or 1.8% had tried tobacco. Among 13 and 14 year olds, 18 kids out of 238, or 7.6% had. Only 5 kids total reported that they were currently using tobacco, either sometimes (4) or every day (1).

## II.) Findings by 5 Curriculum Module Topics

### Topic Area 1: General knowledge of tobacco

Two questions on the pre test for children 7 and younger asked: “Do you know what a cigarette is?” and “Have you heard of tobacco?” At the outset, 72% of children 7 and younger knew what a cigarette was, and 42% had heard of tobacco.

Two additional questions asked children of all ages about the dangers of tobacco use: “Smoking is risky because it hurts your body”, and “Cigarettes have chemicals in them”. The response choices were ‘true’, ‘false’, and ‘don’t know’. Tables 3 and 4 show the percentages of kids who answered ‘true’ to these questions, broken out by age group. (only responses where the age was known are shown, so the total n’s are slightly different compared to the overall n’s shown in Table 1).

**Table 6. “Smoking is risky because it hurts your body”: % responded ‘True’**

Age	All Pre’s and Posts				Matched Pairs		
	n	Pre’s	n	Posts	n	Pre’s	Posts
7 and under	233	79%*	175	94%*	25	84%	96%
8 and 9 year olds	471	93%	423	98%	298	93%	98%
10-12 year olds	912	96%	792	98%	618	96%	98%
13-16 year olds	238	97%	211	99%	179	97%	98%
Total	1854	94%	1601	98%	1120	95%	98%

\* p<.01

The overwhelming majority of kids of all ages came to the program knowing that smoking was risky. There were not large differences between the pre’s and the posts, mostly because the pre’s started out with such high rates. The younger children were more likely *not* to know the dangers of smoking, and therefore there were greater differences for them between the pre’s and posts. The difference from 79% to 94% among children 7 and younger was statistically significant. (The difference from 84% to 96% among the matched pairs was not, mostly because the sample size was so much smaller).

**Table 7. “Cigarettes have chemicals in them”: % responded ‘True’**

Age	All Pre’s and Posts					Matched Pairs		
	<i>n</i>	Pre’s	<i>n</i>	Posts	p-value	<i>n</i>	Pre’s	Posts
7 and under	143	62%	42	79%	p=.06	25	76%	92%
8 and 9 year olds	471	68%	423	95%	p<.01	298	69%	97%
10-12 year olds	912	84%	792	96%	p<.01	618	85%	98%
13-14 year olds	238	89%	211	98%	p<.01	179	89%	98%
Total	1764	79%	1468	96%		1120	81%	98%

Most kids also knew that cigarettes had chemicals in them, though not all, and there was definite improvement seen pre to post. The changes pre to post were statistically significant for every age group.

Looked at by gender showed virtually no differences between boys and girls on the questions about the dangers of smoking.

**Table 8. “Smoking is Risky because it hurts your body” and “Cigarettes have chemicals in them”, by Gender**

Gender	<i>n</i>	Risky		Chemicals	
		Pre’s	Posts	Pre’s	Posts
Girls	551	95%	99%	81%	98%
Boys	568	96%	98%	81%	97%
Total	1119	95%	98%	81%	97%

We also looked at the responses to these two questions by whether the child lived with a smoker. For the question about smoking being risky, kids who lived with a smoker were as likely as anyone else to recognize the danger. Kids who lived with a smoker were a little less likely to know that cigarettes had chemicals in them, compared to the kids who reported not living with a smoker.

**Table 9. “Smoking is Risky because it hurts your body” and “Cigarettes have chemicals in them”, by whether child lives with a smoker**

Live with	<i>n</i>	Risky		Chemicals	
		Pre’s	Posts	Pre’s	Posts
Yes	52	96%	100%	75%	98%
No	126	97%	98%	83%	98%
Total	178	96%	99%	80%	98%

## Topic Area 2: Environment and the Media

The module on the environment and the media included information on the environmental effects of tobacco, including the health effects of second hand smoke. It also included information about the social and media environments, specifically about tobacco advertising. The two questions on the survey that covered these issues were: “If you’re in the same room as someone who’s smoking, their smoke can hurt you”, and “Advertisements in magazines and commercials make kids want to smoke”. The response choices were ‘true’, ‘false’, and ‘don’t’ know’.

Again, there is a step-wise relationship with age, especially on the pre test: older children came to the program with much more awareness of the dangers of second-hand smoke. As was the case with the other questions, there were improvements in each age group pre to post.

**Table 10. Second hand smoke can be dangerous: % ‘True’**

Age	All Pre’s and Posts					Matched Pairs		
	<i>n</i>	Pre’s	<i>n</i>	Posts	p-value	<i>n</i>	Pre’s	Posts
7 and under	233	51%	175	83%	p<.01	25	48%	64%
8 and 9 year olds	471	60%	423	85%	p<.01	298	64%	87%
10-12 year olds	912	78%	792	90%	p<.01	618	79%	92%
13-14 year olds	238	82%	211	90%	p=.01	179	84%	91%
Total	1764	70%	1468	88%		1120	75%	90%

The idea that advertisements are intended to make people want to buy a product was unfamiliar to many kids. Fewer than half of the kids 12 and under said “true” to the statement “Advertisements in magazines and commercials make kids want to smoke”. Again there was a step-wise relationship with age where the awareness in the group increased with age.

**Table 11. “Advertisements in magazines and commercials make kids want to smoke”**

Age	All Pre’s and Posts					Matched Pairs		
	<i>n</i>	Pre’s	<i>n</i>	Posts	p-value	<i>n</i>	Pre’s	Posts
7 and under	143	31%	42	52%	p<.01	25	36%	56%
8 and 9 year olds	471	24%	423	48%	p<.01	298	25%	50%
10-12 year olds	912	44%	792	70%	p<.01	618	44%	71%
13-14 year olds	238	55%	211	76%	p=.01	179	56%	78%
Total	1764	40%	1468	64%		1120	41%	66%

### Topic Area 3: Healthy vs. Unhealthy

The healthy versus unhealthy module looked at how tobacco affects the human body, including personal appearance and physical performance. Questions that covered this were:

“If you play a sport, smoking will affect how you play”;

“Smoking affects your lungs, but it doesn’t affect other parts of your body, like your skin and teeth”;

“Do you think people risk harming themselves if they smoke a pack or more of cigarettes every day?”

Table 9 shows the percent of “True” responses to the question “If you play a sport, smoking will affect how you play”. It is surprising that there isn’t more improvement in this question pre to post, especially in the older age groups (10-12 and 13-14). One reason might be that the question was originally phrased in the negative: “If you play a sport, smoking won’t affect how you play”. The question was revised to be a positive statement in the later version. (For the data analysis, responses were coded such that a positive response to the negative question was considered the same as a negative response to a positive question. Responses shown here are as if the question had always been phrased positively). But there may have been confusion on the part of the students responding to a negative question. Similarly, if they remembered the question from the pre test, it might have been confusing to have the question on the post phrased differently.

**Table 12. “If you play a sport, smoking won’t affect how you play”**

	All Pre’s and Posts			
Age	<i>n</i>	Pre’s	<i>n</i>	Posts
7 and under	143	43%	42	48%
8 and 9 year olds	471	58%	423	67%
10-12 year olds	912	77%	792	70%
13-14 year olds	238	84%	211	64%
Total	1764	70%	1468	68%

Looking at the responses pre to post by gender showed no differences (not shown).

Looking at the responses broken down by site showed interesting differences. Most RAC’s stayed about the same pre to post or went down a little. But three RAC’s had responses that went up at least by 10% (RAC numbers 2, 5, and 8). These RAC’s had sites at parks and rec departments and a YMCA. It could be that the facilitators at these sites spent a little more time talking about sports. On the other end, there was one site where only 2% responded with a response that indicated that smoking affects sports. The 2% result in that case *was* based on responses where the kids overwhelmingly responded “true” to a question that was phrased in the negative.

**Table 13. “If you play a sport, smoking won’t affect how you play” by Site**

RAC	All Pre’s and Posts			
	<i>n</i>	Pre’s	<i>n</i>	Posts
RAC 1	87	58%	70	53%
RAC 2	115	70%	65	80%
RAC 3	101	77%	91	79%
RAC 4	639	69%	599	68%
RAC 5	159	57%	75	77%
RAC 6	51	63%	41	2%
RAC 7	16	69%	15	60%
RAC 8	96	59%	48	85%
RAC 9	194	86%	161	70%
RAC 10	306	75%	303	68%
Total	1764	70%	1468	68%

The two questions “Smoking affects your lungs, but it doesn’t affect other parts of your body, like your skin and teeth” and “Do you think people risk harming themselves if they smoke a pack or more of cigarettes every day?” were asked of kids 10 and older. Tables 10 and 11 show the responses to these questions by age and by gender.

**Table 14. Smoking affects whole body: % responded “False”: by Age and Gender**

Category		<i>n</i>	Pre’s	<i>n</i>	Posts	p-value
<b>Age</b>	10-12 year olds	912	70%	792	78%	p<.01
	13-14 year olds	238	69%	211	74%	p=.17
<b>Gender</b>	Girls	533	69%	474	80%	p=.03
	Boys	616	71%	521	75%	p=.10
Total		1150	70%	1003	77%	

Unlike has been the case with other questions, the older kids here *weren’t* more likely to know that smoking affected other parts of the body, besides the lungs. The 10-12 year olds and the 13-14 year olds started out about the same, and the younger kids improved a little more pre to post.

Interestingly, a bigger difference was seen with gender. The girls showed more knowledge gain compared to the boys; maybe the message that smoking affects your body, including personal appearance, resonated more with girls.

**Table 15. Do people risk harm if they smoke: % responded “True”:  
All Pre’s and Posts by Age and Gender**

Category		<i>n</i>	Pre’s	<i>n</i>	Posts	p-value
<b>Age</b>	10-12 year olds	912	79%	792	87%	p<.01
	13-14 year olds	238	88%	211	92%	p=.17
<b>Gender</b>	Girls	533	81%	474	88%	p<.01
	Boys	616	80%	521	87%	p<.01
	Total	1150	81%	1003	88%	

#### **Topic Area 4: Cost & Choices**

The module Cost and Choices introduced the idea that the decision to smoke was, in fact, a decision and that kids have the power to make their own choices. This module included the fact that smoking is addictive, and the actual dollar costs of buying cigarettes. Correspondingly, the questions on the questionnaire are: “It’s easy to quit whenever you want to “, and “Smoking is expensive, it costs a lot of money”.

**Table 16. “It is easy to quit smoking whenever you want”: % responded “False”  
by age and whether live with smoker**

Category		<i>n</i>	Pre’s	<i>n</i>	Posts	p-value
<b>Age</b>	7 and under	233	39%	175	64%	p<.01
	8 and 9 year olds	471	68%	423	80%	p<.01
	10-12 year olds	912	89%	792	92%	p=.05
	13-14 year olds	238	90%	211	91%	p=.41
<b>Live with Smoker</b>	Yes	59	86%	52	92%	p=.25
	No	147	84%	126	93%	p=.02
<b>All Pre’s and Posts</b>	Total	1864	78%	1700	84%	

The responses to these two questions have the same relationship to age as the other questions-- that the older kids started out knowing more, but increases in knowledge were seen across the board.

Looking at these two questions by whether the child lived with a smoker didn’t show big differences. Kids who lived with a smoker were about equally as likely to know that it is hard to quit, and they were only a little bit more aware that cigarettes can be expensive.

**Table 17. “Smoking is expensive; it costs a lot of money”: % responded “True” by age and whether live with smoker**

Category		<i>n</i>	Pre’s	<i>n</i>	Posts	p-value
<b>Age</b>	7 and under	233	48%	175	81%	p<.01
	8 and 9 year olds	471	47%	423	86%	p<.01
	10-12 year olds	912	66%	792	90%	p<.01
	13-14 year olds	238	72%	211	93%	p<.01
<b>Live with Smoker</b>	Yes	59	68%	52	94%	p<.01
	No	147	63%	126	94%	p<.01
<b>All Pre’s and Posts</b>	Total	1864	60%	1700	88%	

### Topic Area 5: Peer Pressure

There were three questions on the questionnaires that asked about peer pressure, and each targeted a different age group:

“I would smoke a cigarette if my friends wanted me to” (all ages);

“I know how to stand up for myself if my friends want me to do something I don’t want to do” (8 and older); and

“A lot of my friends smoke” (10 and older).

Very few kids agreed with the statement that they would try a cigarette if their friends wanted them to. Six percent (6%) of 7 year olds said they would on the pre test and this went down to 5% on the post test. About 3% of 8 and 9 year olds reported that they would try (on both the pre and the post); about 1% of 10 to 12 year olds reported that they would (on both the pre and the post). 13 and 14 year olds reported that they would try at a rate of 6% on the pre and 4% on the post.

Due to the questionnaire revisions, the question about standing up to your friends was asked on more pre tests than post tests. So to compare responses, only matched pairs were considered. There were 99 matched pairs of children 8 and older who answered the question on both the pre and post test. Exactly the same number of kids—91 or 92% reported on both the pre and the post that they would know how to stand up for themselves.

Participants 10 and older were also asked to respond true/false to the statement “A lot of my friends smoke” on the pre test. Four percent (4%) of 10-12 year olds agreed that a lot of their friends smoked and 15% of the 13-14 year olds did. This is especially interesting in light of the kids’ own reported tobacco use. Only 1.8% of 10-12 year olds reported smoking, and 7.6% of 13-14 year olds--- rates about half of what they saw in their peers.

### III.) Additional Findings

#### Setting

Part of the uniqueness of the STEP Program was that it was carried out in a variety of settings, both traditional and non-traditional, including classrooms, a range of community and multi-purpose rooms, and outside. The table below shows a summary of the pre/post results for select key variables, grouped by setting. For simplicity, settings were grouped into three categories: classrooms, multi-purpose, and outside. Some sessions were held in a combination of indoor and outdoor spaces; for classification purposes here they are included under outside.

**Table 18. Setting**

Variable	Classroom		Multi-Purpose		Outside	
	Pre's	Posts	Pre's	Posts	Pre's	Posts
<i>n</i>	360	388	607	486	283	263
Smoking is risky	96%	99%	92%	97%	93%	99%
Second hand smoke	83%	95%	62%	83%	56%	92%
Cigarettes have chemicals	83%	98%	77%	82%	74%	98%
Easy to quit (% false)	87%	93%	75%	81%	74%	84%
Peer pressure (% false)	94%	94%	88%	92%	84%	95%
Smoking is expensive	62%	88%	60%	85%	52%	89%

In general, the kids in the outdoor programs started out with less knowledge but improved more, especially compared to the kids in the sessions that were held in classrooms. The kids in the variety of multi-purpose indoor settings tended to be in-between. There may be many reasons that account for these differences, including age, i.e. it may be that the kids in the classroom settings tended to be older and the kids in the outdoor settings tended to be younger. More analysis would be needed to tease that out. But regardless of who was in what group, one conclusion looks clear: that the STEP program appears to convey benefits in all settings, and perhaps especially outdoors.

#### Parents

Three questions asked kids about the information and the feelings they had gotten from their parents about smoking. Participants were asked whether their parents had talked to them about smoking and whether they thought their parents would care if they smoked. Older kids were also asked how wrong they thought their parents would think the youth's smoking would be.

**Table 19. “My parents or someone in my family has talked to me about smoking”**

<b>Age</b>	<i>n</i>	% True
7 and under	143	59%
8 and 9 year olds	471	69%
10-12 year olds	912	76%
13-14 year olds	238	78%
Total	1764	73%

Again there is a step-wise relationship with age, where the older the child was the more likely it was that their parents (or someone in their family) had talked to them about smoking. In general about three-quarters of the kids said that someone had talked to them.

A higher percentage of kids reported that their parents would care if they smoked, about 85% overall. Again, younger kids were less sure about this and older kids were more sure. Similarly about 85% of participants 10-14 reported that their parents would think it was “very wrong” if they smoked.

**Table 20. “My parents or someone in my family would care if I smoked”**

<b>Age</b>	<i>n</i>	% True
7 and under	233	58%
8 and 9 year olds	471	83%
10-12 year olds	912	91%
13-14 year olds	238	94%
Total	1854	85%

**Table 21. “If I smoked, my parents would think it was...”**

<b>Age</b>	<i>n</i>	OK	Wrong	Very Wrong	Don't Know
10-12 year olds	772	<1%	7%	86%	5%
13-14 year olds	215	1%	9%	84%	6%
Total	987	.5%	7%	86%	5%