TOBACCO USE PREVENTION EDUCATION

Tier 2 Curriculum Impact Report

(2017/18)
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Background
Tobacco Use Prevention Education (TUPE) is a program funded by the California Department of Education (CDE) that is designed to reduce tobacco use in youth. The program uses school- and district-wide initiatives (Tier 1) and research-validated curriculums (Tier 2) that build student knowledge about the dangers of smoking, facilitate social skills, and promote youth development assets. In the 2017/18 academic year, two multi-week curriculums were utilized by participating Tier 2 districts: (1) Project Towards No Drug Abuse and (2) Stanford Tobacco Prevention Toolkit. This report summarizes findings from assessments administered to students in the 2017/18 academic year, before (pre-assessment) and after (post-assessment) Tier 2 curriculum exposure.

Method
Assessments
The TUPE Tier 2 curriculum pre- and post-assessment forms are provided in Appendices A and B. The pre-and post-assessments contained items that queried demographic data (grade level, gender, race/ethnicity, and sexual orientation), assessed student knowledge of the effects of tobacco use, and surveyed students on their likelihood to use various, addictive substances (e.g., cigarettes, e-cigarettes/vapes, alcohol, and marijuana). The post-assessment contained additional items that queried student perceptions of the benefits of the TUPE Tier 2 curriculum.

Student knowledge of the effects of tobacco use was assessed with five test items. A sample question includes, “True or False? E-cigarettes are a safer alternative to regular cigarettes.” Student responses to test items were graded (Correct = 1 point; Incorrect = 0 points) and summed to create a total score that ranged from 0-5 points.

Items that assessed the likelihood of student substance use asked, “How likely is it that you will use the following in the next 6 months?” A listing of specific substances was provided. Students were asked to rate their likelihood of using each substance on a three-point Likert scale. Response options included “Not Likely,” “Somewhat Likely,” and “Very Likely.”

Four items were included on the post-assessment to survey students on the perceived benefits of the TUPE Tier 2 curriculum. A sample item includes, “The Tobacco Use Prevention Education Program has made me more aware of the harmful effects of tobacco, alcohol, and other drugs.” Students were asked to indicate their level of agreement with each item on a three-point Likert scale. Response options included “Agree,” “Not Sure,” and “Disagree.”

Analyses
Data collected through the administration of pre- and post-assessments were intended to demonstrate the impact of the TUPE Tier 2 curriculum on student knowledge, awareness, and use of tobacco products. A one-way, group means comparison test was conducted on total scores for student knowledge to determine if students (on average) scored significantly higher on the post-assessment relative to the pre-assessment. An ad hoc, comparative analysis on the proportion of students earning four or five points on the post-assessment relative to the pre-assessment was also performed and assessed for significance at a conservative .01 a priori alpha level. Similarly, comparative analyses on the proportions of students who answered “Somewhat Likely” and “Very Likely” on items that queried tobacco use were conducted. Additional, exploratory analyses:
• Examined change in the proportion of students who answered “Somewhat Likely” and “Very Likely” on items that queried use of other addictive substances (alcohol, marijuana/hash, non-prescribed prescription medication, and other illegal drugs); and
• Determined if subgroups of students indicated a higher likelihood to use e-cigarettes/vapes, alcohol, and marijuana.
• Calculated the effect size for groups which had significantly higher likelihood of using a substance

Hypotheses
The following hypotheses were tested through group means and proportion comparison tests:

**Student Knowledge**

HO\textsubscript{SK1}: There will be no difference in average total score from pre- to post-assessment.

HA\textsubscript{SK1}: Average total scores for the post-assessment will be statistically, significantly higher than total scores for the pre-assessment.

HO\textsubscript{SK2}: There will be no statistically significant difference in the proportion of students earning four or five points from pre- to post-assessment.

HA\textsubscript{SK2}: The proportion of students earning four or five points on the post-assessment will be statistically, significantly greater than the proportion of students earning four or five points on the pre-assessment.

**Likelihood of Substance Use**

HO\textsubscript{SU1}: There will be no statistically significant difference in the proportion of students indicating a likelihood to use cigarettes in the next 6 months from pre- to post-assessment.

HA\textsubscript{SU1}: The proportion of students who indicate a likelihood to use cigarettes in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use cigarettes in the next 6 months on the pre-assessment.

HO\textsubscript{SU2}: There will be no statistically significant difference in the proportion of students indicating a likelihood to use little cigars/cigarillos in the next 6 months from pre- to post-assessment.

HA\textsubscript{SU2}: The proportion of students who indicate a likelihood to use little cigars/cigarillos in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use little cigars/cigarillos in the next 6 months on the pre-assessment.

HO\textsubscript{SU3}: There will be no statistically significant difference in the proportion of students indicating a likelihood to use smokeless/chew tobacco in the next 6 months from pre- to post-assessment.
**HA_{SU3}:** The proportion of students who indicate are likelihood to use smokeless/chew tobacco in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use smokeless/chew tobacco in the next 6 months on the pre-assessment.

**HO_{SU4}:** There will be no statistically significant difference in the proportion of students indicating a likelihood to use e-cigarettes/vapes in the next 6 months from pre- to post-assessment.

**HA_{SU4}:** The proportion of students who indicate are likelihood to use e-cigarettes/vapes in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use e-cigarettes/vapes in the next 6 months on the pre-assessment.

Response frequencies were calculated for each of the items assessing student perceptions of the benefits of the TUPE Tier 2 curriculum. No hypotheses were generated for Tier 2 curriculum effects on use of non-tobacco substances nor subgroup comparisons on likelihood of select substance use.

**Participants**

**Responses by School**

Students attending seven schools within three Santa Clara County school districts (Campbell Union, Milpitas Unified, and Sunnyvale School District) in addition to the Santa Clara County Office of Education (SCCOE) Alternative Education Program completed TUPE Tier 2 curriculum pre- and post-assessments. A summary of the number of pre- and post-assessment responses collected by school is provided in Table 1. Pre-assessments were completed by 2,239 students while the post-assessment garnered 2,315 responses. Approximately 50% of assessments were completed by students attending Campbell Union School District.

**Table 1. Number of Student Pre- and Post-Assessments by School**

<table>
<thead>
<tr>
<th>School Name</th>
<th>Pre-Assessment</th>
<th>Post-Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCCOE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative Education Program</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Milpitas Unified School District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thomas Russell Middle</td>
<td>597</td>
<td>696</td>
</tr>
<tr>
<td>Campbell Union School District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campbell Middle School</td>
<td>306</td>
<td>207</td>
</tr>
<tr>
<td>Monroe Middle School</td>
<td>299</td>
<td>421</td>
</tr>
<tr>
<td>Rolling Hills Middle School</td>
<td>510</td>
<td>513</td>
</tr>
<tr>
<td>Sunnyvale School District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbia Middle School</td>
<td>188</td>
<td>191</td>
</tr>
<tr>
<td>Sunnyvale Middle School</td>
<td>328</td>
<td>281</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2239</strong></td>
<td><strong>2315</strong></td>
</tr>
</tbody>
</table>
Demographics Summary
A summary of student demographic data collected at post-assessment is provided in Figure 1. Distributions for grade level, race/ethnicity, gender, and sexual orientation are included. The numbers in parentheses indicate the number of participants that responded to each item.

Figure 1. Student Demographics

Grade Level (N=2,309)

- 6th Grade: 0.04%
- 7th Grade: 40.15%
- 8th Grade: 59.72%
- 9th Grade: 0.09%

Race/Ethnicity (N=2,309)

- Asian: 30.0%
- Mixed: 16.2%
- White: 14.9%
- Hispanic: 28.7%
- Other: 10.4%

Gender (N=2,304)

- Boy: 48.2%
- Girl: 48.4%
- I prefer not to say: 1.9%
- Non-binary: 1.0%
- Transgender: 0.4%

Sexual Orientation (N=2,272)

- Straight: 81.7%
- Questioning: 5.8%
- Bisexual: 5.9%
- Lesbian/Gay: 5.4%
- I prefer not to say: 1.9%

Grade Level
The majority of participants that completed the post-assessment were in the 7th (40%) or 8th grade (60%).

Race/Ethnicity
A majority of TUPE Tier 2 participants self-classified as Hispanic (29%) or Asian-American (30%). An additional 31% identified as Mixed (16%) or White (15%). Ten percent, or one in ten participants, were grouped into the “Other” category a posteriori. “Other” included Native Hawaiian/Pacific Islander (4%), American Indian/Alaskan Native (1%), and African-American (2%) subgroups.

Gender
Girls and boys each made up 48% of participants. A small proportion of students answered non-binary (1.0%) or transgender (0.4%) at post-assessment. One percent of participants selected “I prefer not to answer.”
Sexual Orientation
When asked about sexual orientation, most respondents identified as straight (81.7%). Bisexual students and those who were questioning or unsure of their sexual orientation each made up 6% of student responses and just over 1% of participants identified as lesbian or gay. Five percent of participants selected “I prefer not to answer.”

Findings
Assessment of Gains in Student Knowledge
Students scored statistically higher ($t(3,360) = 18.46, p < .001$) on test items at post-assessment. On average, students answered 3.1 questions correct on the post-assessment; a .6 point gain from the average pre-assessment score.

<table>
<thead>
<tr>
<th>Label</th>
<th>Hypothesis Tested</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_{0SK1}$:</td>
<td>There will be no difference in average composite score from pre- to post-assessment.</td>
<td>☐</td>
</tr>
<tr>
<td>$H_{A_{SK1}}$:</td>
<td>Composite scores for the post-assessment will be statistically, significantly higher than composite scores for the pre-assessment.</td>
<td>✔</td>
</tr>
</tbody>
</table>

As shown in Figure 2, at post-assessment, a significantly greater proportion of students (39% vs. 16%) answered four or five items correct ($z = 15.01, p < .001$).

<table>
<thead>
<tr>
<th>Label</th>
<th>Hypothesis Tested</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_{0SK2}$:</td>
<td>There will be no statistically significant difference in the proportion of students earning four or five points from pre- to post-assessment.</td>
<td>☐</td>
</tr>
<tr>
<td>$H_{A_{SK2}}$:</td>
<td>The proportion of students earning four or five points on the post-assessment will be statistically, significantly greater than the proportion of students earning four or five points on the pre-assessment.</td>
<td>✔</td>
</tr>
</tbody>
</table>

Figure 2. Distribution of Correct Items on Pre- and Post-Assessment
Assessment of Change in Likelihood to Use Substances

As shown in Figure 3, participants had no substantial changes in likelihood of use for cigarettes ($z = 0.41, p = .33$), cigars/cigarillos ($z = 2.03, p = .017$), smokeless/chewing tobacco ($z = 1.47, p = .07$), and e-cigarettes/vapes ($z = 1.73, p = .04$).

<table>
<thead>
<tr>
<th>Label</th>
<th>Hypothesis Tested</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_{O_{SU1}}$:</td>
<td>There will be no statistically significant difference in the proportion of students indicating a likelihood to use cigarettes in the next 6 months from pre- to post-assessment.</td>
<td>✓</td>
</tr>
<tr>
<td>$H_{A_{SU1}}$:</td>
<td>The proportion of students who indicate a likelihood to use cigarettes in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use cigarettes in the next 6 months on the pre-assessment.</td>
<td>☐</td>
</tr>
<tr>
<td>$H_{O_{SU2}}$:</td>
<td>There will be no statistically significant difference in the proportion of students indicating a likelihood to use little cigars/cigarillos in the next 6 months from pre- to post-assessment.</td>
<td>✓</td>
</tr>
<tr>
<td>$H_{A_{SU2}}$:</td>
<td>The proportion of students who indicate are likelihood to use little cigars/cigarillos in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use little cigars/cigarillos in the next 6 months on the pre-assessment.</td>
<td>☐</td>
</tr>
<tr>
<td>$H_{O_{SU3}}$:</td>
<td>There will be no statistically significant difference in the proportion of students indicating a likelihood to use smokeless/chew tobacco in the next 6 months from pre- to post-assessment.</td>
<td>✓</td>
</tr>
<tr>
<td>$H_{A_{SU3}}$:</td>
<td>The proportion of students who indicate are likelihood to use smokeless/chew tobacco in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use smokeless/chew tobacco in the next 6 months on the pre-assessment.</td>
<td>☐</td>
</tr>
<tr>
<td>$H_{O_{SU4}}$:</td>
<td>There will be no statistically significant difference in the proportion of students indicating a likelihood to use e-cigarettes/vapes in the next 6 months from pre- to post-assessment.</td>
<td>✓</td>
</tr>
<tr>
<td>$H_{A_{SU4}}$:</td>
<td>The proportion of students who indicate are likelihood to use e-cigarettes/vapes in the next 6 months on the post-assessment will be statistically, significantly less than the proportion of students who indicated a likelihood to use e-cigarettes/vapes in the next 6 months on the pre-assessment.</td>
<td>☐</td>
</tr>
</tbody>
</table>
Though not significant at a .01 *a priori* alpha level, differences in the proportion of participants who indicated a likelihood to use each tobacco substance were observed, however, in the opposite direction. For example, at post-assessment, 10.2% of participants responded “Somewhat Likely” or “Very Likely” to use e-cigarettes/vapes in the next 6 months. The corresponding proportion at pre-assessment was 8.7%. Figure 3 also shows the disproportion in likelihood of future use for e-cigarettes/vapes compared to other tobacco substances. Data support the notion that e-cigarettes/vapes are popular substances among youth, as are alcohol and marijuana (see Figure 4).

Findings from proportion difference tests revealed no significant rate changes in likelihood to use non-prescribed prescription drugs ($Z = .72, p = .23$). However, a greater proportion of students at post-assessment reported that they were “Somewhat Likely” or “Very Likely” to use alcohol ($+2.1\%, Z = 2.42$, $p = .01$).
Subgroup Differences in Likelihood to Use Select Substances

Given their higher likelihood of use, responses for e-cigarettes/vapes, alcohol, and marijuana/hash were selected for analyses of subgroup differences. Subgroup comparison analyses were conducted for:

- Grade 7 vs. grade 8 students;
- LGBTQ+ vs. straight/heterosexual students; and
- Hispanic vs. non-Hispanic students.

Results for each are summarized below.

Grade-Level Differences

As shown in Table 2, seventh (n = 925) and eighth graders (n = 1377) self-reported no significant differences in likelihood to use cigarettes at post-assessment. However, a greater proportion of eighth graders reported that they were likely to use e-cigarettes/vapes, alcohol, and marijuana compared to seventh graders. Differences in proportion ranged from 3.8% to 6.3% for those who were somewhat or very likely to use these substances (see Table 2).

<table>
<thead>
<tr>
<th></th>
<th>% of 7&lt;sup&gt;th&lt;/sup&gt;</th>
<th>% of 8&lt;sup&gt;th&lt;/sup&gt;</th>
<th>Differential</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>97.5%</td>
<td>97.7%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>2.5%</td>
<td>2.3%</td>
<td>.2%</td>
<td>.05</td>
</tr>
<tr>
<td>E-cig/Vape</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>90.5%</td>
<td>85.9%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>9.5%</td>
<td>14.1%</td>
<td>4.6%**</td>
<td>.25</td>
</tr>
<tr>
<td>Alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not likely</td>
<td>89.4%</td>
<td>85.6%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>10.6%</td>
<td>14.4%</td>
<td>3.8%*</td>
<td>.19</td>
</tr>
<tr>
<td>Marijuana/Hash</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>93.7%</td>
<td>87.4%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>6.3%</td>
<td>12.6%</td>
<td>6.3%**</td>
<td>.42</td>
</tr>
</tbody>
</table>

* p < .01  
** p < .001

Notes: The d refers to Cohen’s d, which is a measurement of effect size. Cohen’s d looks at the size of the difference between the two group means divided by the average of their standard deviations. The rule of thumb for effect size is that .2 is a “small” effect size, .5 is a “medium” effect size, and .8 is a “large” effect size.

LGBTQ+

As shown in Table 3, a significantly greater proportion of LGBTQ+ students (n = 294) compared to straight/heterosexual students (n = 1859) reported that they were “Somewhat Likely” or “Very Likely” to use cigarettes, e-cigarettes/vapes, alcohol, and marijuana/hash at post-assessment. Unlike the other subgroups, LGBTQ+ students also had significantly higher proportion of students compared to straight/heterosexual (Z = 4.36, p < .001) students who were somewhat or very likely to use non-
prescribed prescription drugs. Proportion differences of somewhat or very likely users of the aforementioned substances ranged from 3.1% to 7.2%. Rates for likelihood to use cigarettes and non-prescribed prescription drugs among LGBTQ+ students were 2-3x higher than rates observed for straight students.

Table 3. Likelihood of Use by Sexual Orientation

<table>
<thead>
<tr>
<th></th>
<th>LGBTQ+</th>
<th>Straight</th>
<th>Differential</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cigarettes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>95.2%</td>
<td>98.4%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>4.7%</td>
<td>1.6%</td>
<td>3.1%**</td>
<td>.61</td>
</tr>
<tr>
<td><strong>E-cig/Vapes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not likely</td>
<td>84.4%</td>
<td>90.9%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>17.6%</td>
<td>9.1%</td>
<td>6.5%**</td>
<td>.42</td>
</tr>
<tr>
<td><strong>Alcohol</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>82.7%</td>
<td>89.9%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>17.3%</td>
<td>10.1%</td>
<td>7.2%**</td>
<td>.34</td>
</tr>
<tr>
<td><strong>Marijuana/Hash</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>88.4%</td>
<td>92.5%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>11.6%</td>
<td>7.5%</td>
<td>4.1%*</td>
<td>.27</td>
</tr>
<tr>
<td><strong>Non-Prescribed Rx Drugs</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>92.9%</td>
<td>97.6%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>7.1%</td>
<td>2.4%</td>
<td>4.7%**</td>
<td>.63</td>
</tr>
</tbody>
</table>

* p < .01 ** p < .001

Notes: The d refers to Cohen’s d, which is a measurement of effect size. Cohen’s d looks at the size of the difference between the two group means divided by the average of their standard deviations. The rule of thumb for effect size is that .2 is a “small” effect size, .5 is a “medium” effect size, and .8 is a “large” effect size.

Hispanics vs. Non-Hispanics

There were no significant differences between Hispanics (n=808) and non-Hispanics (1499) in reported likelihood to use cigarettes, however, meaningful differences in proportions between groups were observed for e-cigarettes/vapes, alcohol, and marijuana/hash. The proportion of Hispanics (16.5%) who were somewhat or very likely to use e-cigarettes/vapes was more than double the proportion of non-Hispanics (6.7%). Similarly, the rates for likelihood to use alcohol and marijuana/hash among Hispanics were 2-3x greater than rates among non-Hispanics.
Table 4. Likelihood of Use by Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>Hispanic</th>
<th>Non-Hispanic</th>
<th>Differential</th>
<th>$d$</th>
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<tbody>
<tr>
<td><strong>Cigarettes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>96.7%</td>
<td>98.1%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>3.3%</td>
<td>1.9%</td>
<td>1.4%</td>
<td>.31</td>
</tr>
<tr>
<td><strong>E-Cig/Vape</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>83.5%</td>
<td>93.2%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>16.5%</td>
<td>6.7%</td>
<td>9.8%**</td>
<td>.56</td>
</tr>
<tr>
<td><strong>Alcohol</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Not Likely</td>
<td>82.9%</td>
<td>91.7%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>17.1</td>
<td>8.3%</td>
<td>8.8%**</td>
<td>.45</td>
</tr>
<tr>
<td><strong>Marijuana/Hash</strong></td>
<td></td>
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<tr>
<td>Not Likely</td>
<td>85.3%</td>
<td>95.3%</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Somewhat or Very Likely</td>
<td>14.8%</td>
<td>4.8%</td>
<td>10.0%**</td>
<td>.68</td>
</tr>
</tbody>
</table>

* $p < .01$
** $p < .001$

Notes: The $d$ refers to Cohen’s $d$, which is a measurement of effect size. Cohen’s $d$ looks at the size of the difference between the two group means divided by the average of their standard deviations. The rule of thumb for effect size is that .2 is a “small” effect size, .5 is a “medium” effect size, and .8 is a “large” effect size.

TUPE Impact Findings

The majority, nearly two-thirds or more of students who responded to the post-assessment, self-reported perceived benefits to the TUPE curriculum (see Figure 5). Seventy-nine percent of students agreed that they were more aware of the harmful effects of tobacco, alcohol, and other drugs. This observation corresponds with increases in average test scores from pre- to post-assessment. Seventy-two percent of students agreed that the program made them more aware of their attitudes towards drugs and alcohol. This increase in awareness could be partially responsible for the increase in self-reported likelihood to use substances observed at post-assessment. Sixty-five percent of students agreed that the program taught them more ways of abstaining from substance use and 68% agreed that they were more aware of the support systems that could help them deal with drug use, dependence, and abuse. Overall, these findings are positive.
Conclusions

The post-program assessment results indicate that students are becoming more knowledgeable about the effects of tobacco and other drugs as a result of their exposure to the TUPE curriculum. The average test score increased from pre- to post-assessment and the majority of students agreed that the program made them more knowledgeable about the harmful effects of tobacco and other drugs at post-assessment. A majority of students also agreed that the program made them more aware of their own attitudes towards drugs and alcohol, that the program taught them more ways to abstain from substance use, and that the program made them more aware of support systems for dealing with drug use, dependence, and abuse.

Despite the increase in knowledge, student self-reported likelihood of substance use did not decline from pre- to post-assessment. The proportion of students that were somewhat or very likely to use cigarettes stayed relatively the same over time, however, a greater portion of students responded that they were more likely to use e-cigarettes/vapes, alcohol, and marijuana/hash at post-assessment. These data suggest that there may be age-related factors at play, as a greater proportion of eighth graders self-reported that they were more likely to use substances compared to seventh graders. It is also possible that, by increasing awareness, students may be more open to substance-use experiences. While a greater portion of students reported that they are likely to use substances at post-assessment, it should be noted that nearly 9 out of 10 students self-reported that they are not likely to use any substances.

Comparison tests for demographic subgroups confirm disparities between subgroups in likelihood to use substances. Eighth graders and Hispanics reported that they were more likely to use e-cigarettes/vapes, alcohol, and marijuana/hash compared to their seventh grade and non-Hispanic counterparts. More alarming were the self-reported likelihood of substance use observed for LGBTQ+ students relative to straight students. Meaningful differences between groups were observed across substances with the exception of cigars/cigarillos, smokeless or chew tobacco, and other illegal drugs. Rates for likelihood to
use traditional cigarettes and non-prescribed prescription drugs were 3x higher among LGBTQ+ students. These findings underscore the need for additional supports aimed at improving mental health and wellbeing outcomes of LGBTQ+ youth.

Data collection had limitations. Lack of unique student identifiers and the decision to avoid collecting identifiable information from students prevented linkage of student pre- and post-program responses. As a result, the dependency in observations was not accounted for in comparison tests that examined the effects of the TUPE curriculum on knowledge base and likelihood to use substances over time. These tests unrealistically assume that post-responses are independent of pre-responses.
Appendix A
TUPE Pre-Program Survey

TOBACCO USE PREVENTION EDUCATION PROGRAM SURVEY (PRE – BEFORE PROGRAM)

DIRECTIONS: Please use a #2 pencil when completing this form. Answer like this ○ not like this □ or △. Please do not make copies of this form.

Questions 1-8 will help us to get a general sense of who you are. Responses are optional. There are no “right” or “wrong” answers. Please bubble in the appropriate circle for each question. All information collected will be kept confidential. Reports will use aggregate data only.

1. What is the name of your school? ________________________________________________________________

2. What grade are you in?

<table>
<thead>
<tr>
<th>Grade</th>
<th>6th Grade</th>
<th>7th Grade</th>
<th>8th Grade</th>
<th>9th Grade</th>
<th>10th Grade</th>
<th>11th Grade</th>
<th>12th Grade</th>
</tr>
</thead>
<tbody>
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</table>

3. Select current month:

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<tr>
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<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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</tbody>
</table>

4. Select current year:

<table>
<thead>
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<th>Year</th>
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<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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</tbody>
</table>

5. What is your race/ethnicity? (Select all that apply)

A American Indian/Alaskan Native
B Black or African American
C Asian
D Native Hawaiian/Pacific Islander
E White or Caucasian
F Hispanic or Latino
G Other (Please specify): ______________________________________________________________

6. What sex were you assigned at birth?

A Male
B Female
C Intersex
D I prefer not to say

7. What is your gender?

A Boy
B Girl
C Transgender (Boy, Girl)
D Non-binary
E I prefer not to say

8. How do you identify?

A Lesbian/Gay
B Bisexual
C Straight/Heterosexual
D Questioning/Not sure
E I prefer not to say

Questions 9-12 assess knowledge related to smoking tobacco. Please bubble in the best possible answer for each question.

9. Smoking may cause __________________________. (Select all that apply)

A Cancer
B Lung Disease
C Heart Disease
D Death
E None of the Above

PROCEED TO BACK ➔
10. True or False? Smoking makes your hair, breath, and clothes smell bad.  
   True  False  
   A  B

11. True or False? E-cigarettes are a safer alternative to regular cigarettes.  
   True  False  
   A  B

12. True or False? Smoking makes people sick, but only after years of use.  
   True  False  
   A  B

13. Which of the following poisons is found in cigarettes? (Select all that apply)  
   Polonium 210 (radioactive toxin)  Carbon monoxide (found in car exhaust)  Formaldehyde (used to embalm bodies)  Lead (once used in paints)  
   A  B  C  D

Question 14 will help us to get a sense of drug use among program participants. There are no “right” or “wrong” answers. We just want you to be honest. Please bubble in the appropriate circle for each question.

14. How likely is it that you will use the following in the next six months?  
   Not Likely  Somewhat Likely  Very Likely  
   a. Cigarettes  A  B  C
   b. Little cigars/cigarillos  A  B  C
   c. Smokeless/chew tobacco  A  B  C
   d. E-cigarettes/vape pens  A  B  C
   e. Alcohol  A  B  C
   f. Marijuana or hash  A  B  C
   g. Non-prescribed prescription medication (Ex. Valium, Prozac, Vicodin, Oxycodone, Ritalin)  A  B  C
   h. Other illegal drugs (Ex. LSD, mushrooms, PCP, cocaine, crystal meth, crack, heroin, opium)  A  B  C

Thank you for taking the time to complete this survey! If you are interested in receiving additional information about the dangers of smoking and/or help with quitting, please contact your school counselor or call 1(800) NO-BUTTS.
Appendix B
TUPE Post-Program Survey

TOBACCO USE PREVENTION EDUCATION PROGRAM SURVEY (POST – AFTER PROGRAM)

DIRECTIONS: Please use a #2 pencil when completing this form. Answer like this ● not like this ☒ ☑ ☐. Please do not make copies of this form.

Questions 1-8 will help us to get a general sense of who you are. Responses are optional. There are no “right” or “wrong” answers. Please bubble in the appropriate circle for each question. All information collected will be kept confidential. Reports will use aggregate data only.

1. What is the name of your school? __________________________________________

2. What grade are you in?

- 6th grade
- 7th grade
- 8th grade
- 9th grade
- 10th grade
- 11th grade
- 12th grade

3. Select current month:

- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- Dec

4. Select current year:

- 2017
- 2018
- 2019
- 2020
- 2021

5. What is your race/ethnicity? (Select all that apply)

- American Indian/Alaskan Native
- Asian
- Native Hawaiian/Pacific Islander
- Black or African American
- White or Caucasian
- Hispanic or Latino
- Other (Please specify): __________________________________________

6. What sex were you assigned at birth?

- Male
- Female
- Intersex
- I prefer not to say

7. What is your gender?

- Boy
- Girl
- Transgender (Boy, Girl)
- Non-binary
- I prefer not to say

8. How do you identify?

- Lesbian/Gay
- Straight/Heterosexual
- Questioning/Not sure
- Bisexual
- I prefer not to say

Questions 9-12 assess knowledge related to smoking tobacco. Please bubble in the best possible answer for each question.

9. Smoking may cause_____________________. (Select all that apply)

- Cancer
- Lung Disease
- Heart Disease
- Death
- None of the Above

PROCED TO BACK ➔
10. True or False? Smoking makes your hair, breath, and clothes smell bad.  
   True  False

11. True or False? E-cigarettes are a safer alternative to regular cigarettes.  
   True  False

12. True or False? Smoking makes people sick, but only after years of use.  
   True  False

13. Which of the following poisons is found in cigarettes? (Select all that apply)  
   Polonium 210      Carbon monoxide      Formaldehyde      Lead  
   (radioactive toxin) (found in car exhaust) (used to embalm bodies) (once used in paints)  
   A  B  C  D

Question 14 will help us to get a sense of drug use among program participants. There are no “right” or “wrong” answers. We just want you to be honest. Please bubble in the appropriate circle for each question.

14. How likely is it that you will use the following in the next six months?  
   Not Somewhat Very 
   Likely Likely Likely  
   a. Cigarettes  
   b. Little cigars/cigarillos  
   c. Smokeless/chew tobacco  
   d. E-cigarettes/vape pens  
   e. Alcohol  
   f. Marijuana or hash  
   g. Non-prescription medication (Ex. Valium, Prozac, Vicodin, Oxycodone, Ritalin)  
   h. Other illegal drugs (Ex. LSD, mushrooms, PCP, cocaine, crystal meth, crack, heroin, opium)  
   A  B  C

Question 15 will help us to determine if the Tobacco Use Prevention Education Program has had a positive impact on you and your classmates. There are no “right” or “wrong” answers. We just want you to be honest. Please bubble in the appropriate circle for each question.

15. The Tobacco Use Prevention Education Program has . . . 
   Agree Not Sure Disagree  
   a. Made me more aware of the harmful effects of tobacco, alcohol, and other drugs.  
   b. Showed me ways to keep from using tobacco, alcohol, and other drugs.  
   c. Made me more aware of my attitudes towards drugs use.  
   d. Made me more aware of support systems that are available to deal with drug use, abuse, and dependence.  
   A  B  C

Thank you for taking the time to complete this survey! If you are interested in receiving additional information about the dangers of smoking and/or help with quitting, please contact your school counselor or call 1(800) NO-BUTTS.