A Public-Health Approach to Create Nurturing Environments in Schools: A Case Example of the PAX Good Behavior Game

Nurturing Environments\textsuperscript{(1, 2)} can achieve population-level protection of human developmental outcomes by richly reinforcing prosocial behavior, limiting problematic behaviors, reducing toxic influences, and increasing psychological flexibility widely in homes, schools and community settings. This is a case example of how to do so, based on multiple experimental tests and experiences.
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The Critical Role of Nurturing Environments in Human Development: An Act of Conscious Intention Made Real

The 2009 Institute of Medicine Report on the Prevention of Mental, Emotional, and Behavioral Disorders Among Young People (3) provided profound evidence that virtually every mental, emotional, and behavioral disorder may be preventable. The IOM report, which may be downloaded at http://bit.ly/IOM2009, details powerful, evidence-based strategies proven to achieve that goal. The Nurturing Environments paper provides core principles to act upon to achieve that goal.

A. Nurturing Environments Framework

In an issue of the American Psychologist (1), four noted prevention scientists introduced an important conceptual framework for understanding how to protect against, prevent, avert, or reduce the array of related mental, emotional, behavioral, and related physical disorders among contemporary children, youth, and young adults. Here is the abstract of the paper:

The recent Institute of Medicine report on prevention (National Research Council & Institute of Medicine, 2009) noted the substantial interrelationship among mental, emotional, and behavioral disorders and pointed out that, to a great extent, these problems stem from a set of common conditions. However, despite the evidence, current research and practice continue to deal with the prevention of mental, emotional, and behavioral disorders as if they are unrelated and each stems from different conditions.

This article proposes a framework that could accelerate progress in preventing these problems. Environments that foster successful development and prevent the development of psychological and behavioral problems are usefully characterized as nurturing environments.

• First, these environments minimize biologically and psychologically toxic events.
• Second, they teach, promote, and richly reinforce prosocial behavior, including self-regulatory behaviors and all of the skills needed to become productive adult members of society.
• Third, they monitor and limit opportunities for problem behavior.
• Fourth, they foster psychological flexibility and the ability to be mindful of one’s thoughts and feelings and to act in the service of one’s values even when one’s thoughts and feelings discourage taking valued action.

The evidence is reviewed to support this synthesis and describe the kind of public health movement that could increase the prevalence of nurturing environments and thereby
contribute to the prevention of most mental, emotional, and behavioral disorders. This article is one of three in a special section (see also Muñoz Beardslee, & Leykin, 2012; Yoshikawa, Aber, & Beardslee, 2012) representing an elaboration on a theme for prevention science developed by the 2009 report of the National Research Council and Institute of Medicine.


The Nurturing Environments framework is more flexible and inclusive, with greater sensitivity to context, than lists of 20-to-50 specific risk or protective factors. For example, common lists of risk and protective factors don’t include the risk impact of historic disparities or dietary deficiencies on epigenetic mechanisms or the protective effects of evidence-based practices such as environmental strategies. The quadrant is highly responsive to inherently cultural differences, as they are metaphorically like the four amino acids that scaffold DNA.

### B. Why Nurturing Environments in Classrooms and Schools

The Nurturing Environments Model focuses on triadic domains of development: family, school, and community because of their documented evolutionary and developmental significance in both longitudinal and experimental studies, as well as in cross-cultural anthropological studies that inform us much about the evolution of human behavior in societies. In most cultures, around age five, children start spending most of their waking hours with other children.
Recognize & Reward successes in/by
- Media
- Political arena
- Other leaders
- Imitable models from all ages and backgrounds

Multi-problem analyses
Identify Behaviors to Increase
Linked causes & mechanisms
Identify Behaviors to Decrease

Multi-problem analyses
Identify Behaviors to Increase
Linked causes & mechanisms
Identify Behaviors to Decrease

Draw out common values
Defuse fears & avoidance

Identify Benefactors to Increase
Linked causes & mechanisms
Identify Benefactors to Decrease

Identify Benefactors to Increase
Linked causes & mechanisms
Identify Benefactors to Decrease

Cite powerful studies & links to cultural practices
Cite relevant endorsements or standards
Create system for monitoring, evaluation & research

Create policy, organizational, & advocacy supports to nurture efforts
Develop Business Model

Create Community Prevention Score/Dashboard

Launch Social Marketing: Advocacy & Media

Products have catchy, positive name (a meme)
Performance names benefits & little pain

Place for getting product is easy & non-stigmatizing
Price is low for to use in money or time.

Promotion focuses on popularity, joining, aligned values & benefits for all. Creative epidemiology aligns people & organizations for common action.

Create workforce & training systems
Monitor & Coach implementation & proximal outcomes

Plan Population-Level Change:
Reach, Efficacy, Adoption, Implementation, & Maintenance

Create Community Prevention Score/Dashboard

Population-Level Targeting

Developmental stages
- Birth
- Childhood
- Adolescence
- Adulthood

Multiple Settings
- Families
- Schools
- Communities

Low Intensity
High Intensity
Low reach
Hi reach

Population-Level Targeting

Note: Workforce development efficiency achieved by broad use of similar/evidence-based strategies & evidence-based kernels.
### C. Map the Multiple Proximal, Medium-Term, and Long-Term Outcomes Predicted From the Localized Application

The table below is the basis for a worksheet that helps map the localized implementation (based also on developmental and longitudinal studies) that accounts for risk or protection. We provide some examples in the table.

**Table 1: Example Predicted Measures**

<table>
<thead>
<tr>
<th>Temporal Sequence</th>
<th>Outcomes to Increase</th>
<th>Outcomes to Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediate/Proximal</td>
<td>• Sustained attention</td>
<td>• Disturbing, disruptive, inattentive behaviors</td>
</tr>
<tr>
<td></td>
<td>• Peer attention for prosocial peer behaviors</td>
<td>• Transition time</td>
</tr>
<tr>
<td></td>
<td>• Bids for positive attention based on prosocial behavior</td>
<td>• Peer and adult attention to negative behavior</td>
</tr>
<tr>
<td></td>
<td>• Noticing positive group behaviors by peers and adults</td>
<td>• Harsh or punitive vocalizations</td>
</tr>
<tr>
<td></td>
<td>• Noticing positive group behaviors by peers and adults</td>
<td>• Emotional outbursts</td>
</tr>
<tr>
<td></td>
<td>• Noticing positive group behaviors by peers and adults</td>
<td>• Withdrawal illness behaviors</td>
</tr>
<tr>
<td>Medium-Term</td>
<td>• Attendance by children and adults</td>
<td>• Visits to school nurse or school clinics</td>
</tr>
<tr>
<td></td>
<td>• Peer efforts to support and include new children or excluded children</td>
<td>• Complaints about illnesses</td>
</tr>
<tr>
<td></td>
<td>• Benchmark test scores or early indicators of increased academic success</td>
<td>• Referrals for clinical or support services</td>
</tr>
<tr>
<td></td>
<td>• Teacher and parental reports of student mental, emotional, and behavioral disorders</td>
<td>• Vandalism or stealing</td>
</tr>
<tr>
<td></td>
<td>• Improved biological indicators of health such as BMI, self-reported wellbeing/happiness</td>
<td>• Teacher and parent reports of increased prosociality and other competencies by students</td>
</tr>
<tr>
<td>Longer Term</td>
<td>• Higher standardized test scores</td>
<td>• Lower indicators of physiological indicators of mortality and morbidity (e.g., diurnal cortisol) that effect epigenetics</td>
</tr>
<tr>
<td></td>
<td>• Improved indicators of resiliency</td>
<td>• Lower placement in special education services</td>
</tr>
<tr>
<td></td>
<td>• Matriculation from HS and increased university entry</td>
<td>• Lower rates of diagnoses for mental, emotional, behavioral, and related physical disorders</td>
</tr>
<tr>
<td></td>
<td>• Delayed vaginal intercourse</td>
<td>• Lower levels of risk sex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lower arrest, drug, mental illness, and suicide cases</td>
</tr>
</tbody>
</table>
D. Create Evidence-Based Predictions of the Impact Locally

Published research outcomes on PAX GBG are impressive, of course. The outcomes are more impressive when translated to your setting. Political leaders, educational leaders, and policy advocates want to know how this will be benefit US (the people) in the political division. PAXIS Institute has good templates for this, based on the numbers of first graders in your political division. Current research shows that PAX GBG can benefit ANY grade level in terms of reducing problematic behaviors and increasing academic engagement. Only the first- and second-grade data can be used to forecast lifetime benefits with any scientific integrity. The following is a sample of predicted benefits for 1,000 grade-one children some 20 years later based on current outcome publications.

Table 2: Estimated Impact per 1,000 First Grade Children by Age 21

<table>
<thead>
<tr>
<th>Numbers</th>
<th>Sample Outcome Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>Fewer young people will need any form of special education services</td>
</tr>
<tr>
<td>56</td>
<td>More boys will likely graduate from high school</td>
</tr>
<tr>
<td>67</td>
<td>More boys will likely enter university</td>
</tr>
<tr>
<td>89</td>
<td>More girls will likely graduate from high school</td>
</tr>
<tr>
<td>69</td>
<td>More girls will likely enter university</td>
</tr>
<tr>
<td>10</td>
<td>Fewer young people will commit and be convicted of serious violent crimes</td>
</tr>
<tr>
<td>96</td>
<td>Fewer young people will develop serious drug addictions</td>
</tr>
<tr>
<td>66</td>
<td>Fewer young people will become regular smokers</td>
</tr>
<tr>
<td>35</td>
<td>Fewer young people will develop serious alcohol addictions</td>
</tr>
<tr>
<td>49</td>
<td>Fewer young women will contemplate suicide</td>
</tr>
<tr>
<td>66</td>
<td>Fewer young men will contemplate suicide</td>
</tr>
</tbody>
</table>

Across the 1,000 students affected as they grow to adulthood, current U.S. cost-benefit analyses show that each child, and his or her family and community will accrue about $13,050 in net benefits (4). The documentation at the Washington State Institute for Public Policy could be used to customize projections in other countries, based on local cost data. The predicted benefits should be linked to current and localized cultural practices to the maximum extent possible, including other cost-studies published about local conditions and trends. In context of these cost benefits, it is extremely useful and important to link the outcomes to current standards, other initiatives, and even consensus endorsements. For example, a government may have an initiative to reduce social determinants or historic disparities, which PAX addresses.

A sensitivity is that other stakeholders may see this effort as "competition," and it is far better to build links of expanding mutual interests. For example, many political jurisdictions in the U.S. have Positive Behavioral Interventions and Supports (PBIS) or other education initiatives, and supporters of these initiatives might object that PAX competes with them. These issues require diligence to understand how strategies interact so that diverse support emerges.

PAXIS Institute has an estimator that localities can use to make projections of the likely impact for any number of first grade children. Localities need to ascertain the number of
first graders in the local education agencies (LEAs) that are proposed for the project timeline. The figure below is the estimator, which will be available as “Flash” utility on line in late 2014 on GoodBehaviorGame.org. Otherwise, call PAXIS Institute and we can easily run the numbers for you. Here is an example calculation for a real school district.

Figure 1: Example of an Actual Larger School District Impact Using Its Actual 1st Grade Enrollments

**Predicted Benefits of PAX GBG in Your School, District, or Community When First Grade Students Reach Adulthood After 1-2 Years of PAX GBG Exposure***

<table>
<thead>
<tr>
<th>Enter number of First Graders at school, district or community&gt;&gt;684 &gt;&gt;</th>
<th>1,846</th>
<th>&lt;&lt;&lt; Enter number of First Graders</th>
</tr>
</thead>
<tbody>
<tr>
<td>159</td>
<td>Fewer young people will need any form of special education services</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>More boys will likely graduate from high school</td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>More boys will likely enter university</td>
<td></td>
</tr>
<tr>
<td>164</td>
<td>More girls will likely graduate from high school</td>
<td></td>
</tr>
<tr>
<td>128</td>
<td>More girls will likely enter university</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Fewer young people will commit and be convicted of serious violent crimes</td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>Fewer young people will likely develop serious drug addictions</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Fewer young people will likely become regular smokers</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Fewer young people will likely develop serious alcohol addictions</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>Fewer young women will likely contemplate suicide</td>
<td></td>
</tr>
<tr>
<td>121</td>
<td>Fewer young men will likely attempt suicide</td>
<td></td>
</tr>
</tbody>
</table>

| $24,034,920 | Predicted financial net savings to students, families, schools, communities, state/federal governments |
| $23.67 | Estimated Cost of PAX GBG Materials Per Child for Lifetime Protection |
| $22.00 | Estimated Cost of External Training & Technical Supports Per Teacher Prorated per Child’s Lifetime |
| $26.80 | Estimated Cost of Internal Supports for Implementation and Maintence by Teachers Prorated per Child’s Lifetime |

*Note: The forecasts are based on multiple randomized, longitudinal control trials of the active ingredients of this evidence based practice. Benefits will vary as consequence of the quality of implementation, training, supports, commitment, and other variables; the predicted impact is greater for first grade children with higher entering risks for internalizing and externalizing disorders. The cost savings and lifetime benefits increase if trained teachers use this evidence-based based strategies in succeeding years for new entering cohorts of grade one children. While PAX GBG has well-documented immediate benefits for students, teachers and schools in other grades, limited randomized longitudinal data exist to forecast similar benefits for other grades at this time. Copyright © 2013-14, PAXIS Institute, All rights reserved. This estimator may not be used for any other evidence-based program than PAX Good Behavior Game®.
E. Create a Credible Local Demonstration Project

PAX GBG can be easily replicated rather quickly and produce important scientifically proven indicators of success. A credible local demonstration project has the added value of helping build local capacity with modest costs. Major new, large initiatives in large educational agencies’ political divisions or countries should be undertaken only after a credible local demonstration for any number of reasons. The credible local demonstration can be organized as follows:

An interrupted time-series (multiple-baseline) across classroom sites is an excellent choice.

What is a multiple-baseline? A “multiple baseline” design tracks more than one subject or group, behavior, or setting over time repeatedly and, following a baseline (before-intervention) condition, intervenes in each case, but at different or staggered times (5-12). “Baseline” in a “multiple baseline” study has two meanings. First, as with all designs, it refers to pre-treatment or existing conditions — the conditions that existed before imposition of the intervention or new treatment. Second, in a multiple baseline design, it refers to a particular subject or group, behavior, or setting that will be tracked throughout the study independent of other “baselines.”

A multiple baseline design usually has the following characteristics: Two or more directly observable, well-defined phenomena are tracked throughout the study (called baselines); and the baselines can represent different subjects (e.g., people, families, groups, or communities), different behaviors (e.g., paying attention, doing a task, not selling tobacco), or some combination of subjects and behaviors. Some characteristics hold true: 1) Each baseline is tracked for an extended period before any intervention; 2) After a stable and/or predictable pattern of baseline has been established, intervention is introduced to ONE of those baselines. The other baselines are left alone but tracked. 3) After a stable and/or predictable pattern of performance has been established with the behavior to which intervention (treatment) was applied, the intervention (treatment) is applied to a second baseline.

One way to conduct a multiple baseline is across grade levels across schools. This was the model of a demonstration project in Manitoba in one school division of 12 schools, a substantial number of which are Francophone schools as well as English speaking. Thus the observations and implementation were staged sequentially from grade one through grade six or eight, depending on whether it was an elementary or K-8 school.

The demonstration project happened during the last 10 weeks of the school year, with grade-one teachers and administrators training over two days with accredited national trainers. These teachers then went to the 12 sites to start PAX in grade one and meet briefly with the other teachers. Later, the grade-one teams and their administrators helped other grades implement the program. Figure 1 shows the results on disturbing, disruptive, and inattentive behaviors (spleems) for all grade-one classrooms among the
12 schools. Figure 2 shows the staged effects across all grades during the 10 weeks, with the older students having a few weeks of exposure from baseline to post training.

Figure 3: Average number of spleems per child per hour and percentage change in grade-one classrooms in Seine River School Division, Spring 2011

Note that one school, site K, had an increase in problematic behaviors compared to 11 that had a significant decrease. School K sustained a dramatic loss of administrative leadership about a month before school ended, and previous data from many sites shows that such problematic behaviors normally increase at the end of the school year. This is a reminder that even the most proven evidence-based practice cannot necessarily overcome organizational or personnel crises that happen as efforts are scaled up. Nevertheless, this was enough to persuade provincial authorities to proceed with a provincial rollout, because this level of consistent change seen in behavior at the end of the school year had never been documented previously. The strength of the reduction did vary as a function of the enthusiasm of implementation.

Remember a key motto from Silicon Valley: Failure can teach you more than success can. The reason that PAX GBG is largely successful in implementation today is because of past failures that illuminated problems likely to crop up in the real world, which are covered over in “hot house” early studies that devote tons of resources.

Testing PAX for Acceptability and Usability Before Extensive Translation. An important aspect of this demonstration involves use of PAX in the context of another language. In the interest of time, only the PAX materials used directly with children were translated into French, such as Tootle Notes; Posters; the See, Hear, Feel, Do Posters; Desk Cards; etc. The training of teachers and staff was conducted in English. All of the trade names used in PAX GBG such as PAX™ (peace, productivity, health and happiness), Spleems™ (unwanted behaviors), Tootles™ (the opposite of tattles, which are written compliments), etc. stayed the same. Following the successful demonstration project, the teachers’ manual and related materials, including training slides, were translated into French so that training and lessons could be easily delivered in the two official languages of Canada: English and French. Manitoba has the second largest concentration of French speakers in Canada.
Another function of the demonstration project was to examine proof of concept for using PAX GBG in other grades, which was likely to become a request based on experience in other jurisdictions and based on the success of rollouts in grade one.

The intervention process is repeated to all the baselines, each at a different point in time. Generally, once a treatment has been applied to a behavior, it is NOT terminated or removed. Here is an example of an illustration of multiple-baseline for a few teachers, testing the coaching or mentoring model. A real such study was done that served two purposes: 1) helping improve the manual so that more teachers were able to implement effectively with just the manual, and 2) to improve the effectiveness of coaching with the revised manual.

The example above is a summarized multiple baseline across 186 teachers in eight diverse school districts. This is an example of a great policy presentation of a demonstration project over the course of three months, proving that PAX GBG could be implemented rapidly with modest mentoring. That demonstration project led to a policy to implement PAX more widely in the United States.
A carefully constructed demonstration project can avert many problems in large-scale population implementations of an evidence-based practice like PAX GBG.

F. Suggested Measures for a Demonstration Project

A demonstration project is not just for show in the context of planning larger implementations for school districts, communities, provinces/states, or even nations. It is a serious effort to discern what adaptations might be necessary for the social-cultural context, how PAX GBG can be best integrated with existing programs and practices, and to show that proximal benefits of PAX GBG are replicable and acceptable in the context of a community or communities. While this strategy is perhaps the single most scientifically proven strategy across cultural contexts (13), understanding potential fits and grit in implementation are important so that PAX GBG can be fine-tuned for maximum benefits for the children, staff, and families who are the intended beneficiaries. PAXIS Institute suggests the measures for a demonstration project:

• Repeated direct observation of disturbing, disruptive, inattentive, and unwanted behaviors (Spleems) using the standardized definitions and data system (available from PAXIS).
• Repeated direct observations of implementation of PAX GBG using the PAX GBG Rubric (14, 15), also available from PAXIS
• Weekly collection of No-Carbon Required (NCR) PAX Scoreboards, including calculated PAX Minutes
• Pre-implementation survey/interview with staff of what they wish to see, hear, feel, and do more and less of in their classroom/school
• Post-implementation survey/interview with staff of what they wish to see, hear, feel, and do more and less of in their classroom/school
• Suggested option: Teacher-completed Strengths and Difficulties Questionnaires on students pre and post (freely available in most languages at SDQinfo.org)
• Suggested option: Consumer satisfaction survey of staff
  o Suggested option: Monitoring of relevant student indicators as appropriate to setting before, during, and after implementation, such as: Attendance
  o Behavioral incidents, nurses office visits, or office referrals
  o Benchmark or academic scores that might be repeated measures
• Suggested option: Before and after student interviews or surveys about key behaviors

G. Cultivate Local Impact Testimonials Via Early Adopters

A demonstration project needs not only to collect reasonable proximal data as above, but also to capture written and oral testimonials from users for future training and recruitment. The budget should include funds for such videos produced by reasonably skilled persons. Example videos for the above eight districts can be downloaded to show others at http://bit.ly/PAX-8-Districts. More videos are available at http://paxis.org/news/videos that involve First Nations and francophone schools, as well as the interviews before and after implementation in the Manitoba demonstration
effort involving 12 schools (Seine River School Division). Interviews with children (pairs) are exceptionally powerful, and parent stories can likewise be powerful. A most common thing that children do at home or with their families is to write Tootle notes, suggest using the timer, granny wacky prizes at home, and even play pretend PAX Games when they “play school.”

H. Phase 2: Develop Scalable Implementation and Research Capacity

Based on past experiences across the U.S. and Canada, local demonstration projects are likely to be successful, if important local organizational, political, and personnel issues were well planned at the beginning. Larger communities or provinces/states and even countries that wish to have PAX GBG achieve public health or population-level benefits will need to develop capacities implementation, evaluation, and original research. The next sections detail elements of how that might happen, based on the logical model for PAX GBG.

I. Develop a Sustainable Business Model.

It is vital that the local demonstration project measure important outcome data and frame how those data might have a larger impact on the schools, community, and larger political body. Almost any entity that begins PAX wants to continue it, because of the easily measured immediate benefits in the first instance. The long-term outcomes assure that PAX GBG has some of the highest rates of return on investment (ROI) in prevention of better than 90 to 1, which is provided in detail by the Washington Institute for Public Policy (4). A business model involves who will advocate for and pay for the immediate, medium-term, and long-term benefits of PAX GBG because of its benefits.

Table 3: Suggested Table for Discussion of Economic Impact

<table>
<thead>
<tr>
<th>Predicted Indicator/Benefit</th>
<th>Suggested Economic Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced teacher burnout &amp; stress</td>
<td>Lower turnover, lower sub costs, lower recruitment costs, and health care costs,</td>
</tr>
<tr>
<td>50% to 80% reduction in disturbing, disruptive, inattentive and problematic behaviors</td>
<td>Fewer referrals to principal’s office, fewer injuries, vandalism, fewer cases of ADHD or conduct problems, lower psychotropic drug use, lower rates of special education services</td>
</tr>
<tr>
<td>Higher benchmark scores during school year</td>
<td>Higher standardized test scores, higher rates of high school graduation, university entry; reduced need for special education services</td>
</tr>
<tr>
<td>Fewer emotional problems</td>
<td>Lower rates of anxiety, depression, and suicide</td>
</tr>
<tr>
<td>Lower rates of impulsivity and aggression</td>
<td>Improved parenting; Lower rates alcohol, tobacco, drug use, crime, anti-social personality disorder; delayed first vaginal intercourse with resulting risk of pregnancies</td>
</tr>
<tr>
<td>Reduced multiple mental, emotional, and behavioral disorders during childhood, adolescence, and young adulthood; Increased high-school graduation and university entry</td>
<td>Reduced health-care costs, reduced obesity, reduced disability/welfare payments; Increased tax revenue for local, state/provincial, and national governments from productive citizens; More productive employees</td>
</tr>
</tbody>
</table>

What are novel funding solutions? Some states are moving to provide third-party reimbursement to implement PAX in classrooms as interventions and treatment, which necessarily involve prevention for others. This is justified because of the long-term
reductions in multiple mental, emotional, and behavioral disorders. Other settings have had classrooms and schools sponsored by businesses.

The business model has to cover both direct and indirect costs of protecting each child with the evidence-based practice of PAX GBG. The direct cost of materials, training, and supports per child lifetime is approximately (US dollars) $37.50 and $112.50 for indirect costs such as staff labor, substitutes, travel, etc. The direct costs are less than almost any approved vaccine against childhood diseases. Both PAX GBG and childhood vaccines require indirect costs of labor and supports of people who deliver the protective strategy. These costs may vary by political division, due to the prevailing cost of labor, travel, taxes/duties, shipping, etc. The costs per child may spread across one or two years of school, depending on when the protective strategy is initiated.

J. Create or Adapt Policies and Organizational Supports

The benefits of PAX GBG cut across multiple programmatic silos and time, which can cause diffusion of responsibility for adoption, implementation, and maintenance. One group or another can lay responsibility on another for the adoption, implementation, and maintenance—while avoiding any operational and fiscal contributions.

If one, however, considers the mental, emotional, behavioral, and related physical wellbeing of the children as common-pool resource for the future of a community, units of local or national governments, then the effective principals of regulating a common-pool resource, summarized by Nobel Laureate Elinor Ostrom, are useful to guide population-level, protective strategies for children, which are detailed in a recent paper (16). Not all of these features need to be in place to achieve the benefits of PAX GBG, although using more of the features tends to improve outcomes:

Group identity. Members of the most successful implementations of a protective strategy like PAX GBG have a strong sense of group identity and know the rights and obligations of membership, along with the boundaries of the resource they are managing. This is about OUR children’s futures, not the outcomes of a single classroom, school, department, district, or political division. This is parenthetically why children adopt the identity of being PAX Leaders who better their world and themselves, and why the adults are expected to lead in being, modeling, reinforcing, and encouraging PAX.

Proportional costs and benefits. Having some members of a group or community do all the work while others receive the benefits cannot continue over the long term. In the most successful groups, the expectation is that everyone will do his or her fair share and those who go beyond the call of duty receive appropriate recognition. When leaders or groups receive special privileges, it is because they have special responsibilities for
which they are accountable. Thus, sections of society or the community who receive the benefits of PAX GBG must contribute to the creation of those benefits.

Consensus decision-making. People hate being bossed around but will work hard to implement a consensus decision—t o do what we want, not what they want. In addition, the best decisions often require knowledge of local circumstances that we have and they lack, making consensus decision-making doubly important. Notice that PAX GBG involves even the students in the decision-making, so that PAX is not about compliance but about working together for a better classroom, school, community, and society. Consensus doesn't mean that everybody has to agree, but everybody has a voice in the processes to implement and adapt PAX GBG to local circumstances. Note: PAX GBG is best when not imposed on teachers or schools. Initially, it should be offered to those who want it. Overtime, the success tends to result in school-wide or community adoption of PAX GBG because of its widely perceived benefits.

Monitoring. Even when most members of a group mean well, the temptation always exists to receive more than one’s share of the benefits and to contribute less than one’s share of the costs. In addition, at least some individuals might try to game the system actively. If lapses and transgressions are undetectable, the group enterprise is unlikely to succeed. Thus, PAX GBG has multiple monitoring systems to provide feedback to students, staff, families, administrators, and funders of implementation and results. These simple, practical monitoring systems are not optional with the adoption, implementation, and maintenance of PAX GBG, as the lack of them reduces the efficacy of PAX GBG.

Graduated sanctions. Friendly gentle reminders are usually sufficient to keep people in solid citizen mode, but there must also be the capacity to apply stronger sanctions, if transgressions continue. The PAX GBG uses “spleems” to cue students to be better citizens of their classrooms. PAX GBG involves the use of public scoreboards of success to encourage students and adults alike. PAX GBG includes added supports for students and staff who may not respond to the universal elements of the evidence-based practice. Adults in school settings have a high responsibility NOT to subvert the benefits of PAX GBG for students and other teachers.

Fast and fair conflict resolution. When conflicts arise, they must be resolved quickly and in a manner that both parties consider fair. This typically involves a hearing in which respected members of the group, who can be expected to be impartial, make an equitable decision. Processes and procedures for this vary by context and culture.

Local autonomy. PAX GBG is nested within successively larger groups of a larger society, such as a school, a parents’ association, a school board, a city, a state or provincial government, or even a national government. These groups must have enough authority to create its own social organization and make its own decisions, as outlined in the previous points, yet also honor the scientific integrity of PAX GBG.

Nested governance principles. The experience of PAX GBG in the classroom is nested with schools, a larger society, and in relationships among groups and higher level entities. To the degree that the nested entities adhere and support these principles, the better the
results will be for the children and their collective futures. Now that PAX exists in 38 U.S. states and multiple Canadian provinces, we are collecting policies and practices (see [www.GoodBehaviorGame.org](http://www.GoodBehaviorGame.org)) to help all levels of users adapt, adopt, and create variations of policies and practices that advance the benefits of peace, productivity, health, and happiness. One such model includes the Healthy Child Manitoba Act, which can be adapted to school divisions, communities, states/provinces, and even governments. See the Healthy Child Manitoba website at [https://www.gov.mb.ca/healthychild/about/hcmact.html](https://www.gov.mb.ca/healthychild/about/hcmact.html).

**K. Plan Population Level Change with the RE-AIM Formula**

RE-AIM stands for Reach, Efficacy, Adoption, Implementation, Maintenance, and Measurement (17). We’ve provided a worksheet on the next page to begin thinking about the RE-AIM formula in your local context.

Glasgow and others (18-23) proposed the RE-AIM framework for thinking about the long-term public health effects of interventions. RE-AIM is not about treatment type efforts; rather RE-AIM is about making environmental changes that cause population-level changes. Based on simple mathematics, the formula makes sense:

- **Reach**: The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative or strategy
- **Efficacy/Effectiveness**: The impact of an intervention on important outcomes, including potential negative effects, quality of life, and economic outcomes
- **Adoption**: The absolute number, proportion, and representativeness of settings and intervention agents who are willing to use a strategy
- **Implementation**: At the setting level, implementation refers to the intervention agents’ fidelity to the various elements of an intervention’s protocol. This includes consistency of delivery as intended and the intervention time and cost
- **Measurement and Maintenance**: The extent to which a program or policy becomes institutionalized or part of the routine organizational practices and policies. Maintenance in the RE-AIM framework also has referents at the individual level. At the individual level, maintenance has been defined as the long-term effects of a program on outcomes after six or more months after the most recent intervention contact.

Glasgow and colleagues argue that the benefit of a practice is a function of its Reach times its Efficacy. However, even an efficacious intervention that reaches many people will have limited impact over time, unless it is Adopted, Implemented, and Maintained. From this standpoint, PAX GBG has been designed to make it easier to succeed in the context of the RE-AIM formula (16, 17, 24, 25). Specifically, an array of evidence-based kernels (fundamental units of behavioral influence) supplements and expands the core of the Good Behavior Game program’s efficacy, adoption, implementation, and maintenance.
Achieving the goals of the RE-AIM formula calls for people to understand carefully what the “active ingredients” are in a protective or preventive strategy. Those active ingredients are more than what happens between a teacher and student or parent and child. An example is helpful. Say your community or state wants to adopt an evidence-based parenting program, which sounds like a great idea. So you list some of the best practices and adopt practices with high marks for research quality. However, the active ingredients to achieve population-level results are more complicated.

a) We normally think of the active ingredients as what the parent does with the child. But there are many more “ingredients.”
b) There should be active ingredients that maximize the acceptance of the strategy by the child, who is not just a passenger.
c) There should be strategies that the practitioner uses that maximize the adoption and implementation by the parent.
d) The program must also have ingredients that maximize the probability that the practitioner will actually use the strategy with many parents and children.
e) The training program must maximize the ability of practitioner to implement the strategy successfully and to solve problems when they occur.
f) The organization that employs the practitioner must be willing to adopt the program, pay for it, and reinforce its use.
g) The entity that delivers training and materials to organizations and practitioners needs skills in using strategies that maximize learning, adopting, and using the programmatic strategy.
h) Some other entities or persons must be willing to pay for the delivery of this evidence-based practice.

Nested inside of the PAX GBG Logic Model is explicit thinking and research on those “levels” of adoption, implementation, etc. using “evidence-based kernels,” (25) which are fundamental units of behavioral influence that can be utilized throughout the programmatic delivery to achieve population-level results. Evidence-based kernels come in four “flavors” that can be assembled and used to address the four facets of Nurturing Environments to achieve population-level or public health outcomes, described in in a number of papers in detail (1, 2, 16, 17, 26). The four “flavors” of kernels help foster the four key principles of nurturing environments, which in turn are the “active ingredients” of PAX GBG in Table 4, which are all empirically tested. Those ingredients then drive the RE-AIM model.
Table 4: Analyses of kernels (active ingredients) in the PAX Good Behavior Game to enhance RE-AIM

<table>
<thead>
<tr>
<th>Kernel or critical component</th>
<th>Rationale</th>
<th>Original GBG¹</th>
<th>PAX GBG²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common Components</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response cost for negative behavior (e.g., Conyers et al., 2004)</td>
<td>Easier to use and effective for ADHD like behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team competition (e.g., Beersma et al., 2003)</td>
<td>Creates positive peer pressure, and reduces negative peer attention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public posting of results (e.g., Parsons, 1982)</td>
<td>Increases performance and peer pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team rotations (deemed critical but no study)</td>
<td>Reduces bullying and peer rejection</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Low emotional response to negative behaviors (e.g., Abramowitz et al., 1987)</td>
<td>Reduces accidental attention to negative behavior by adult</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Three games per day (deemed critical but no study)</td>
<td>Improves maintenance of skill</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Use of timer (e.g., Adams &amp; Drabman, 1995)</td>
<td>Creates pressure to succeed and excitement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probe or secret game (unannounced) – indiscriminable contingency (Freeland &amp; Noel, 2002)</td>
<td>Increases generalization to non-game times</td>
<td>*</td>
<td>●</td>
</tr>
</tbody>
</table>

| **Added or deleted components for increased RE-AIM of PAX GBG**                             |                                                                                               |               |         |
| Use of edibles or stickers as prizes                                                       | No longer viewed socially acceptable in the present, and are unnecessary                     | ●             | No      |
| Lower points to win (e.g., Harris & Sherman, 1973)                                         | Causes more rapid improvement                                                                 |               | ●       |
| Student help design game rules (e.g., Fishbein & Wasik, 1981)                               | Improves acceptance by students and occasions correspondence                                  |               | ●       |
| Relational frame language correspondence training (e.g., “I’m a PAX Leader; Embry et al., 1996) | Improves generalization of rule governed behavior                                            | ●             | ●       |
| Use of Premack Principle for prizes (e.g., Browder et al., 1984)                            | Improves acceptability of game by students and adults                                        | No            | ●       |
| Non-verbal cues (e.g., Rosenkoetter & Fowler, 1986; Cox, Cox, & Cox, 2000)                 | Accelerates generalization and adoption of the game                                           | No            | ●       |
| Meaningful roles as DRO (e.g., Rutter, 1981)                                                | Increases attention to positive behavior; reduces problem actions                             | No            | ●       |
| Setting generalization—recipe for carrying over the Game to hallways, restrooms, cafeteria, etc. (e.g., Fishbein & Wasik, 1981) | Improves generalization by students and acceptability of game by adults | No            | ●       |
| Symbolic self-modeling (e.g., Embry et al., 1996)                                           | Improves imitation of behavior                                                                | No            | ●       |
| School-home note (e.g., Kelley et al., 1988)                                                | Prompts family reinforcement and generalization of behavior to home                          | No            | ●       |
| Peer-to-peer praise notes (e.g., Embry et al., 1996; Skinner et al., 2000)                  | Improves social competence and reduces negative peer attention                               | No            | ●       |
| Self-monitoring by teacher (e.g., Agran et al., 2005)                                       | Improves mastery of skill and results by teacher                                             | No            | ●       |
| Good behavior lottery (e.g., Putman et al., 2003)                                           | Improves generalization when not playing the game                                             | No            | ●       |

¹ Dolan et al., 1993  
² Embry et al., 2003
### Table 5: RE-AIMing for large-scale protective effects from PAX GBG

<table>
<thead>
<tr>
<th>RE-AIM Formula Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R</strong> (Reach)</td>
<td>The &quot;problem&quot; to be leveraged for change is not just one but multiple related mental, emotional, behavioral, and physical disorders. These problems (e.g., ADHD, depression, academic failure, obesity, suicide, violence, and more) are called multiple related problems, which have inter-related ties. PAX GBG aims to cut the ties between the problems for maximum results across multiple-related problems.</td>
</tr>
<tr>
<td><strong>E</strong> (Effectiveness)</td>
<td>PAX GBG must engage students, school staff, and families to be active agents of change. To achieve a public health benefit, many must be REACHED to leverage changes in prevalence rates. To change a big problem, one must REACH large percentages of children, school adults, and related community adults. By focusing on widespread implementation in first grade classrooms, REACH is more likely to be effective than a whole school focus initially.</td>
</tr>
<tr>
<td><strong>A</strong> (Adopt)</td>
<td>Leveraging reduction in multiproblem outcomes means that the impact (EFFECTIVENESS) of PAX GBG must be powerful on cutting the epidemiological ties that bind related mental, emotional, behavioral, and physical disorders. The sequence of rollout of PAX GBG in classrooms (e.g., the vision, non-verbal cues, the timer, granny’s wacky prizes, then the Game itself, expanded student roles, generalization strategies) are designed to maximize effectiveness. Careful rollout assures efficacy/effectiveness.</td>
</tr>
<tr>
<td><strong>I</strong> (Maintain and Measure)</td>
<td>In any given community, many people of all ages and multiple organizations must ADOPT new behaviors to leverage the broad effects results in the population from GBG, as a public-health vs. individual model. While not obvious, PAX GBG has been designed to make it easy for adults to adopt and achieve success, and PAX GBG is specifically designed to promote adoption by children to urge the adults in turn. Each component of PAX GBG is adoptable in its own right, which increases the probability of the adoption of the total effort.</td>
</tr>
<tr>
<td><strong>M</strong> (Maintain)</td>
<td>For leveraged change, the PAX GBG components have to be used repeatedly by adults and children. PAX GBG’s use of evidence-based kernels makes it relatively easy to use the active ingredients, which have built-in positive feedback for both students and adults. As PAX GBG has been designed to provide perceived value for students and adults, this helps create momentum for sustained implementation to tip the balance for sustained change.</td>
</tr>
<tr>
<td><strong>A</strong> (Maintain and Measure)</td>
<td>For lasting change and benefits, people and organizations must keep doing actions that MAINTAIN and MEASURE the policy, practice, or program for months or even years. MAINTENANCE must be planned, supported, and reinforced so that each cohort of first-graders experience PAX GBG, which includes replacement materials, training and supports for new staff, etc. The ongoing measurement of PAX GBG’s impact is critical for maintaining the investments in PAX GBG for the lifetime benefit to children, families, and communities.</td>
</tr>
</tbody>
</table>
Figure 4: Worksheet for maximizing RE-AIM in your efforts

Taking Aim to Create Population-Level Nurturing Environments for Prevention and Protection

1. Total number of people (ages) to be reached in the population (www.census.gov):

2. How will your plan get at least 25% of the reached population to adopt the kernel?

3. What are the ways actual implementation of the kernel will be promoted, reinforced and supported:

3b. What is the monitoring for implementation?

2c. What is the monitoring for % adoption?

4. How will individuals, groups and organizations use of the kernel be maintained over time?

5. How will changes in behavior be measured each day, week or month and reported as a public scoreboard?

6. How will change be celebrated?

Embry DD, Biglan A. Evidence-Based Kernels: Fundamental Units of Behavioral Influence. Prevention Science revised and re-submitted.
L. Create Community/Population Level or Public Scoreboard of Successes

Imagine if local or national sports had no scoreboard to follow successes? Many fewer people would be cheering on team improvements. The principle of a public scoreboard is a well-established evidence-based kernel in behavior change and public health policies (17, 25)—especially for community-level or population-level change (17, 27). PAX GBG implementation and maintenance benefit classroom, school, and community-level public scoreboards. The figure below shows an example of a public scoreboard for PAX in a classroom using PAX Minutes (a computation of opportunity for engaged learning and teaching).

The notion of PAX Minutes is not limited to a classroom. They can be scaled to whole schools or even communities as a way to cue or stimulate participation.

A classic way that happens in many communities is for fundraising, wherein a goal is set and the graph marks the progress toward the fundraising or participation goal. For example, this could be the number of classrooms participating in PAX or the number of classrooms who have earned 1,000 or 10,000 PAX Minutes.

Public scoreboards can also be products of peaceful, productive, healthy, or happy behaviors from PAX activities. For example, in the PeaceBuilders study in Pima County there were daily examples in the six daily newscasts involving positive home notes the students received for PeaceBuilding behaviors. Each day, six schools (on a rotation of 90 sites) provided the names and ages of five students who received a written note that explicitly praised a child for positive, peacebuilding behaviors. Thus, 900 different children were recognized every month for the types of peaceful, productive, healthy, and happy protective behaviors being promoted as a community norm. The actual behaviors recognized on TV were also recognized specifically on schools public address systems, as another version of a “scoreboard” of success.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Entry</th>
<th>Operation</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Enter the number of minutes the PAX Game was played:</td>
<td>C.</td>
<td>Enter the number of minutes the PAX Game was played:</td>
</tr>
<tr>
<td>B.</td>
<td>Enter number of Teams who won that Game:</td>
<td>D.</td>
<td>Enter total number of PAX Teams playing this game:</td>
</tr>
<tr>
<td>C.</td>
<td>Multiply (A) X (B), and enter that number here:</td>
<td>E.</td>
<td>Divide C by D, enter the results here:</td>
</tr>
<tr>
<td>D.</td>
<td>Enter total number of PAX Teams playing this game:</td>
<td>F.</td>
<td>Add the product of E to a PAX Chart (see examples)</td>
</tr>
<tr>
<td>E.</td>
<td>Divide C by D, enter the results here:</td>
<td>G.</td>
<td>Add the product of E to a PAX Chart (see examples)</td>
</tr>
</tbody>
</table>

Table 1: Computed PAX Minutes

Example of Computed PAX Minutes

Here is an example of a computation of PAX Minutes. Before the students played the PAX Game, they had already "won" 27 PAX Minutes that week.

<table>
<thead>
<tr>
<th>Chart Before Playing New PAX Game</th>
<th>Chart After Playing New 12-minute Game</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chart Before Playing New PAX Game</td>
<td>Chart After Playing New 12-minute Game</td>
</tr>
</tbody>
</table>

Note: The chart with your PAX kit may vary in design, but has the same function.
Neighboring schools have created “scoreboards” to work together, like the two elementary schools in the PeaceBuilders project separated by one-mile. The students created a peace chain consisting of positive peer-to-peer written notes (called Tootles in PAX). Each school’s neighborhood community judged the students’ notes for authenticity, and those that passed were laminated and stapled together to form a chain that the power company ultimately hung from the electric poles. Then the city mayor wrote a Tootle (Praise Note) that was then used to link both schools’ chain to create “PeaceBuilders Way”. The local media publicized all of this, with both elementary schools assembled together.

The scoreboard can show formal scientific results as well, which Healthy Child Manitoba is doing, along with important public relations and media. Please see: http://www.gov.mb.ca/healthychild/pax/

M. Launch Social Marketing Advocacy and Media

Marketing PAX GBG is not about the awareness of children’s mental, emotional, behavioral, and related physical problems per se. The campaign and advocacy is about promoting the adoption, implementation and maintenance of the solutions in PAX GBG. This fits well into a modified social-marketing framework explained in other publications about prevention programs (17).

- **Product Naming:** The name being promoted is PAX, which stands for Peace, Productivity, Health, and Happiness. The Good Behavior Game is a tool inside that. The positive framing of PAX is powerful in reaching both children and adults. PAX is a branded trade name, which significantly helps positioning and promotion.

- **Performance:** PAX delivers on many indicators that children, teachers, and parents want: safer schools, better academic achievement, more time to teach, less bullying, less crises and drama, less stress, and more very quickly. The long-term benefits are powerful in certain audiences and the immediate performance benefits are important for other audiences. Importantly, the immediate performance benefits are key to the long-term benefits, which save $13, 050 NET per child by adulthood. PAX teaches self-regulation during everyday routines, and is not just a “classroom management” program. Every classroom and child benefits from PAX either directly or indirectly.

- **Place:** PAX GBG is not about those children, those classrooms, or those schools; PAX is for all classrooms where adults and children are having a wonderful classroom now—with long-term benefits. Learning how and when to use PAX GBG can happen at any point in the school year, with measurable benefits. There are multiple ways for staff to learn how to use PAX effectively, which opens up the numbers and percentages of teachers and schools that can adopt and use PAX.
• **Price:** Cost of PAX can be measured in two ways: actual cost of goods and services to implement compared to other evidence-based programs, and rate-of-return on investment (ROI) compared to other evidence-based classroom programs.

_Costs of materials._ The National Registry of Evidence-Based Programs and Practices provides useful comparisons of costs and the Washington State Institute for Public Policy provides a matching independent assessment of Return on Investment. For teachers, the costs for comparison include:

<table>
<thead>
<tr>
<th>Program</th>
<th>Per teacher kit cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAX Good Behavior Game</td>
<td>$299</td>
</tr>
<tr>
<td>Positive Action</td>
<td>$325</td>
</tr>
<tr>
<td>Media Detective</td>
<td>$400</td>
</tr>
<tr>
<td>Michigan Model for Health</td>
<td>$525</td>
</tr>
<tr>
<td>AIR Good Behavior Game</td>
<td>$600</td>
</tr>
<tr>
<td>Open Circle</td>
<td>$725</td>
</tr>
<tr>
<td>Positive Alternative Thinking Skills</td>
<td>$799</td>
</tr>
<tr>
<td>Guiding Good Choices</td>
<td>$881</td>
</tr>
</tbody>
</table>

_Pricing note:_ Material costs are in U.S. dollars + shipping charges from Tucson, Arizona, USA + customs or sales taxes if applicable. Rush orders accrue extra handling charges. We accept approved purchase orders or credit cards. Large or out-of-country orders may require special approvals. PAXIS Institute does not discount the price of goods and services, as our prices are keep very low compared to competitors and for the the quality of our materials (which are created with four-color printing).

All printing is presently done in North America. Purchasers must agree to observe trademark and copyright rules regarding PAX GBG, which are standard conventions. While each teacher’s kit has many reproducibles, manuals, and other tools are not reproducible, except by written permission from PAXIS Institute. Illegal reproduction of materials or misuse of trademarks is not PAX, and may result in cancellation of legal rights to use PAX materials or trademarks, as well as other remedies afforded by law.

_Language Editions (other than English or French) and Adoptions._ The motto of PAX GBG is, “I better my world, I better myself.” PAXIS is dedicated to impacting the world. We are open to translations and cultural adaptations, which require licensing and other arrangements approved by our Intellectual Property Attorney of Record.
Training and accreditation costs. Core training costs are also cost competitive, especially since sites can develop accredited PAX Partners™ (local mentors) who can induct, explain, and coach new staff within their defined area (a school or district). PAX Partners™ are not allowed to train trainers, only directly mentor teachers and staff implementing PAX GBG.

Cost of onsite trainings by accredited national/regional PAX GBG Master Partner™ are as follows (1/1/2014):

- One-day trainings, $2,900 (1-day, 40 participants) + travel
- Two-day = $1,900
- Third and additional days = $1,500 each

All initial and expansion site-based trainings require the purchase and use of the PAX GBG data system for each school so that proximal effects and implementation can be monitored and mentored for quality control.

PAX Data System per school = $250.00

PAX Partner™ Trainings span three days, and cost $2,500 per participant (plus their lodging and travel) if attending regional or nationally scheduled PAX Partner destination trainings. Custom PAX Partner™ training and accreditation for communities, provinces/states, or districts require a quote from PAXIS Institute.

PAX GBG has the best ROI compared to any universal prevention strategy (4), or $13,050 per student net after costs. The following table provides an independent return on investment against other programs.

Table 6: Return of Investment (ROI) for Evidence-Based Prevention Programs

<table>
<thead>
<tr>
<th>Program name</th>
<th>Date of last literature review</th>
<th>Total benefits</th>
<th>Taxpayer benefits</th>
<th>Non-taxpayer benefits</th>
<th>Costs</th>
<th>Benefits minus costs (net present value)</th>
<th>Benefit to cost ratio</th>
<th>Odds of a positive net present value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Behavior Game / PAX GBG</td>
<td>Apr. 2012</td>
<td>$13,206</td>
<td>$3,594</td>
<td>$9,612</td>
<td>($156)</td>
<td>$13,050</td>
<td>84.51</td>
<td>92 %</td>
</tr>
<tr>
<td>Youth mentoring programs (taxpayer costs only)</td>
<td>Apr. 2012</td>
<td>$11,180</td>
<td>$3,127</td>
<td>$8,053</td>
<td>($1,506)</td>
<td>$9,673</td>
<td>74.72</td>
<td>60 %</td>
</tr>
<tr>
<td>Quantum Opportunities Program</td>
<td>Apr. 2012</td>
<td>$31,797</td>
<td>$10,470</td>
<td>$21,326</td>
<td>($26,455)</td>
<td>$5,341</td>
<td>12.10</td>
<td>59 %</td>
</tr>
<tr>
<td>Youth mentoring programs</td>
<td>Apr. 2012</td>
<td>$9,278</td>
<td>$3,075</td>
<td>$6,202</td>
<td>($4,885)</td>
<td>$4,393</td>
<td>85.71</td>
<td>57 %</td>
</tr>
<tr>
<td>Seattle Social Development Project</td>
<td>Apr. 2012</td>
<td>$6,967</td>
<td>$2,197</td>
<td>$4,770</td>
<td>($3,086)</td>
<td>$3,882</td>
<td>21.26</td>
<td>59 %</td>
</tr>
<tr>
<td>Guiding Good Choices</td>
<td>Apr. 2012</td>
<td>$2,603</td>
<td>$680</td>
<td>$1,923</td>
<td>($887)</td>
<td>$1,717</td>
<td>92.94</td>
<td>78 %</td>
</tr>
<tr>
<td>Communities That Care</td>
<td>Apr. 2012</td>
<td>$2,066</td>
<td>$577</td>
<td>$1,489</td>
<td>($572)</td>
<td>$1,494</td>
<td>98.61</td>
<td>92 %</td>
</tr>
<tr>
<td>Behavioral Monitoring and Reinforcement Program (BMRP)</td>
<td>Apr. 2012</td>
<td>$1,299</td>
<td>$480</td>
<td>$819</td>
<td>($1,301)</td>
<td>(S2)</td>
<td>1.00</td>
<td>55 %</td>
</tr>
<tr>
<td>Promoting Alternative Thinking Strategies (PATHS)</td>
<td>Apr. 2012</td>
<td>($70)</td>
<td>($4)</td>
<td>($66)</td>
<td>($17)</td>
<td>($187)</td>
<td>n/e</td>
<td>18 %</td>
</tr>
<tr>
<td>Strengthening Families for Parents and Youth 10-14</td>
<td>Apr. 2012</td>
<td>$410</td>
<td>$306</td>
<td>$104</td>
<td>($1,099)</td>
<td>($690)</td>
<td>0.37</td>
<td>12 %</td>
</tr>
<tr>
<td>CASA START</td>
<td>Apr. 2012</td>
<td>($4,624)</td>
<td>($248)</td>
<td>($4,375)</td>
<td>($6,940)</td>
<td>($11,564)</td>
<td>n/e</td>
<td>0 %</td>
</tr>
<tr>
<td>Children’s Aid Society – Carrera</td>
<td>Apr. 2012</td>
<td>$2,797</td>
<td>$2,962</td>
<td>($165)</td>
<td>($14,498)</td>
<td>($11,702)</td>
<td>0.19</td>
<td>36 %</td>
</tr>
<tr>
<td>Fast Track prevention program</td>
<td>Apr. 2012</td>
<td>($27,204)</td>
<td>$572</td>
<td>($27,866)</td>
<td>($59,812)</td>
<td>($87,105)</td>
<td>n/e</td>
<td>0 %</td>
</tr>
</tbody>
</table>

N. Develop/Upscale Workforce for Sustainability/ Research Partnerships

Mentoring and monitoring, pre-service, early career, and current in-service training are especially important for sustainable impact of PAX GBG. Presently, PAXIS Institute has
licenses with universities for pre-service courses on PAX GBG, early-career courses or staff development, and other initiatives.

PAXIS Institute encourages joint research projects on expanding the effectiveness of PAX GBG or related evidence-based kernels. Presently, the portfolio of research projects includes:

- Florida State University
- Johns Hopkins Center for Prevention and Early Intervention
- Pennsylvania State University
- The Manitoba Centre for Health Policy
- University of Alberta
- University of Arizona
- University of Calgary
- University of Maryland
- University of South Carolina
- University of Virginia
- Wright State University, Ohio

### O. Expand Population-Level Targeting

PAX GBG or its related evidence-based kernels can be used or adapted across stages of human development from prenatal through adulthood. Similarly, the kernels or PAX elements can be used across multiple settings (schools, families, organizations such as after-school or Sunday schools, and community settings), plus have different levels of application by intensity. These applications involve separate discussions and recipes. Expanding the reach, intensity, or developmental stages can have multiple benefits for prevention, early intervention, and treatment—which we discuss in the original kernels paper (25). Other papers discuss how to use these tools to solve novel problems in communities (26).

### P. Recognition and Reinforcement of Successes

With recognition and reinforcement of successes, those successes will decline or decay. People tire of toiling away without being recognized for their contributions: a 25-year pin and coffee mug do not count for much.

Just as PAX GBG in the classroom builds in recognition and reinforcement of increasing PAX, so must your organizational implementation. This must be part of the monthly implementation and dissemination plan. These recognitions and reinforcements need not be costly, but they must be often enough to register on the public and the people who are performing the miracle of PAX.

Community tours of schools using PAX can do this. Simple news stories and newsletter info can help with this. Putting staff in a tootle chair to receive accolades from the students who adore PAX, and many simple, low-cost ways can keep people noticed for the PAX they do and promote.
Q. Document Impact and Update Research

Impact is relative simple and understandable, which should be promoted every few months to stakeholders. It might be that since the introduction of PAX:

- Spleems (unwanted behaviors) have declined rapidly
- More teachers report being able to teach effectively
- Attendance or benchmark scores have gone up
- Nurses’ office visits have gone down
- Etc.

If you are doing research on PAX GBG or kernels, please submit it for publication. Also please visit www.pubmed.gov at least once every six months to learn the latest findings, which should also be noted at www.GoodBehaviorGame.org
Attachment A: What is PAX?

The next two pages are a simple description of what PAX GBG is and how it works. This may be reproduced freely. The PDF version is available at:

PAX teaches students self-regulation, self-control, and self-management while collaborating with others for peace, productivity, health & happiness. PAX is not a classroom management program per se or about consequences and control, yet it does make classrooms joyful again for learning. PAX combines the science from PeaceBuilders®, Good Behavior Game (GBG) & other studies. How does PAX GBG work? PAX nurtures self-regulation in peer-contexts in order to improve attention and reduce impulsivity, thus wiring the brain during any school activity for long-term gain.

1. With facilitation from adults, the children create a large, visual word-map of what they would see, hear, do and feel more of in a wonderful classroom. The children create a similar chart of what they would see, hear, do and feel less of. This task is done carefully, publicly posted, and refreshed or revised often to keep it alive.

The things happening more are called PAX™ (Peace, Productivity, Health and Happiness). The things that happen less (unwanted behaviors) are called SPLEEMS™. Very soon, children start to discriminate between PAX™ and SPLEEMS™ for learning sustainable self-regulation and attention—helped by these novel words in each new situation.

Unlike common school “rules” such as raise your hand, stay in your seat, etc., PAX and SPLEEMS are contextually based on the activity. So, PAX and SPLEEMS are quite different during silent reading, cooperative learning, gym, working in groups, in computer lab, in the hallways, in the cafeteria, in the lunchroom, in art or music, etc. Remember, these contextual, lifeskill discriminations take time—just like reading or math skills take time to evolve.

2. The job of teachers and other adults is to notice PAX positively and often, plus record SPLEEMS very accurately during PAX Games. Teachers and adults also set up conditions of success among students to create PAX, and not to foster SPLEEMS either intentionally or unintentionally. Adults learn not to nag, scold, or lecture about SPLEEMS—lest students learn to play “Teacher Nintendo”—pushing buttons for attention.

3. Adults notice unwanted behaviors (Spleems) in a neutral way and use positive cues like the harmonica for quiet or hand signals for voices to reduce Spleems. These PAX strategies reduce accidental re-traumatization of children exposed to harsh faces, voices, coercion, and perceived threats from others. Thus, PAX prevents future trauma.

4. Children practice making more PAX and “sweeping away” SPLEEMS in cooperative rotating teams to “make their world a better place.” Teachers ask students to predict what PAX and Spleems would be for each specific activity and debrief after a PAX Game.

5. A classroom educator or other adult acts as a gentle “umpire” during PAX games, which happen several times a day during any normal classroom or broader school activity. PAX games might occur during math, reading or any academic task. The PAX Game can be played during transitions, in the library or going to bathroom breaks, on a field trip, in the gym, in cafeteria and even school buses as children gain PAX skills.

6. A classroom typically has 3-5 PAX teams at any given time. Teams are ad hoc for hallways, etc. These can be structured in different ways to suit particular needs. PAX is designed to teach students how to cooperate and get along with all types of people—a critical lesson for life, the teams are “balanced”, including different types of children. The “problem” children should never be placed on one team, nor should they be excluded from playing. The teams are frequently rotated so that children learn how to help each other succeed. PAX is inclusive for all children, having many adaptations and supports.

7. EVERY team can win if it has three or fewer SPLEEMS during a PAX Game. The teacher or adult is the umpire of SPLEEMS. The game will not work well if the adults try to make it a winner-take-all situation, in which only the team with the fewest SPLEEMS wins. It will not work well if the adults have fits over SPLEEMS. Remember, just like everyone poops, everyone SPLEEMS—including adults.

8. The structure of PAX mimics successful anthropological, cultural practices around the world by using rotating teams of diverse children who work toward a common good for all. PAX helps teach students to avoid blaming others, and encourages them to try again when one or a group stumbles in achieving a goal. (Please continue on the reverse side)
The PAX Game should be played at least three times a day during normal classroom activities. Students typically learn PAX skills quickly, though need practice to play longer. Wise teachers make a daily ritual of planning when to play the Games with their students.

PAX Games start very briefly—a minute or two, increasing in time as students win 12 out of 15 games (or 85%) each week. Eventually, First Graders can "play" the PAX Game for 30 to 45 minutes, vastly increasing fully engaged teaching and learning. Older children can learn to play longer.

Teams and the classroom accumulate PAX minutes by playing the game for longer times, while still only getting three or fewer SPLLEEMS for any given game. The students love seeing themselves making more and more PAX, which brings them peace, productivity, health and happiness. The students and the adults also have a lot of good old-fashioned, fun—without any batteries.

When the kids win a PAX game, they earn a randomly selected, fun, and intrinsically motivating, play-based ("brain break") for a few seconds or minutes. They might earn a 10-second giggle fest, or a 30-second dancing gig, or one minute to whisper to their friends. There are hundreds of these activities that the adult can choose to put in the “Granny’s Wacky Prize” bag, and the children will eagerly invent new suggestions that don’t involve material, extrinsic rewards. These active, fun intrinsic rewards teach children two related skills: how to self-regulate under conditions of excitement and how to self-regulate when one doesn’t “win” or achieve a desired goal immediately.

Students and adults learn to write Tootle™ Notes (the Opposite of Tattles) to each other: student-to-student, student-to-adult, adult-to-adult, and adult-to-student. This helps sustain and build PAX. The procedure for Tootle Notes from peers reduces bullying and increases positive friendships as well as support for helping each other. Tootles also help spread PAX to families.

As both the adults and students become adept at PAX, the students develop an extraordinary ability to turn on their attention voluntarily; to go up and down in excitement with grace; to handle distractions and disappointments well; and to cooperate for common goals with other people of differing abilities and skills. Both adults and students start to savor the daily joys they created. In a word, the young people become “everyday scientists” to better their world and themselves.

PAX trained teachers and their PAX Partners (mentors) have access to special web-based supports to broaden benefits of PAX, for problem solving, and for monitoring results as well as implementation.

To learn more about PAX GBG, visit GoodBehaviorGame.org or call 1-877-GO-PAXIS, or send an inquiry email to gb@paxis.org. You may view videos about PAX GBG at: GoodBehaviorGame.org, promoteprevent.org, or www.gov.mb.ca/healthychild/pax/.

The scientific studies for the recipe for PAX GBG can be found at www.pubmed.gov, search under “Good Behavior Game”; Peacebuilders, and “evidence-based kernels”.

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Attachment B: PAX Good Behavior Game Logic Models

The next three pages are the actual logic models related to PAX GBG.

The first is the biosocial model based on the nurturing environments and shows how PAX GBG works at an individual level. That is different than the logical model to make it happen for school district, a community, or a larger political division.

The second page is about the population-level change logic model, discussed in detail here.

The third page is an example of how the two logic models can be discussed or explained in the context of common, localized strategic prevention framework logic models.
A nurturing environment happens by daily intention, attention, effort, and observation of the effects the actions. The PAX GBG is one of the best, most proven examples of nurturing environment in a classroom. PAX operates at multiple levels to effect people's daily intention, attention, effort, and logic of making this happen occurs in productive, healthy, and happy lives. The important behaviors for peaceful, long-term effects on profoundly behavior in the moment, and it has multiple levels to effect people's mental in a classroom. PAX operates at proven examples of nurturing environments to promote a science of intentional change. Brain and Behavioral Sciences.

Evolutionary Threats (Prenatal Through Early Childhood)

- High Exposure to Toxic Influences/Toxins
- High Exposure to Problematic Behaviors or ACEs*
- High Reinforcement of Anti-Social Behavior

High Probability of...
- Mental “Disorders”
- Emotional “Disorders”
- Behavioral “Disorders”
- Related Physical “Disorders”

*Adverse Childhood Experiences

Early Protection or Buffering by PAX Good Behavior Game

- Low Exposure to Toxic Influences
- High Exposure to Positive Behaviors; by Peers & Adults
- High Reinforcement by Peers & Adults of Prosocial Behavior

High Probability of...
- Mental Health
- Emotional Balance
- Behavioral Competence
- Related Physical Health

Evolutionary Adaptations

Evolutionary Adaptations to a Predatory, Stressful World of Worse Social Determinants with Probability of:
- Foreshortened future view
- Low reward delay
- Impulsivity, or withdrawal
- High rates aggression
- Depression
- Increased risk taking
- Early sexual intercourse
- Multiple sexual partners
- Low offspring investment
- Obesity

Evolutionary Adaptations to a Cooperative World with Positive Social Supports with Probability of:
- Longer future view
- Higher reward delay
- Lower impulsivity
- Higher cooperation
- Optimism, resiliency
- Smart risk taking
- Delayed sexual intercourse
- Stable relationships
- High offspring investment
- Fewer metabolic disorders


PAX Good Behavior Game Logic Model
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### Multi-Addiction Prevention Model

#### Theory of Change

On May 28, The 2009 *Institute of Medicine Report on the Prevention of Mental, Emotional, & Behavioral Disorders* (funded by the Substance Abuse and Mental Health Administration) proves that lifetime multiple addictions (Tobacco, Alcohol, Illegal Drugs and Prescription Drug Abuse) are predicted by early behaviors of peers in primary grades, which can be prevented, averted, or reduced by a classroom/school environmental strategies that immediately alter environmental risk factors and increases environmental protective factors against lifetime ATOD addictions.

<table>
<thead>
<tr>
<th>Environmental Problem Statement</th>
<th>Environ. Strategies</th>
<th>Activities</th>
<th>Population-Level, Public Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
<td><strong>But why?</strong></td>
<td><strong>Examples:</strong></td>
<td><strong>Short Term</strong></td>
</tr>
<tr>
<td>Multiple environmental factors have increased early disruptive, disturbing, &amp; inattentive behaviors that predict lifetime ATOD and related risks.</td>
<td>Proximity to 911 worsened these trends; More children identified in preschool years; Rising bullying; CDC shows rising rates in NJ</td>
<td>Decrease disturbing, disruptive, destructive and inattentive behaviors in elementary grades &amp; after school settings 50% to 80%, to avert lifetime ATOD</td>
<td>Create powerful demonstration of early wins using IOM strategies (e.g., PAX Good Behavior Game); Train 25% or more primary grade classrooms to implement behavioral vaccine</td>
</tr>
<tr>
<td>Marketing of psychotropic medications for treatment of pediatric patients swamps out non-drug prevention strategies. <em>(Note: many of these drugs are frequently abused).</em></td>
<td>NJ School nurses report higher rates of disorders associated with psychiatric and behavioral problems; NJ’s economy is significantly predicated on seeing these problems as biological disorders</td>
<td>Promote early evidence-based prevention strategies from the 2009 IOM report that health-care organizations, doctors, nurses, schools, and other clinicians can bill for instead of psychotropic meds. Promote similar solutions to policy makers and families to adopt</td>
<td>Presentations to insurance underwriters, &amp; ground round presentations, pediatric, family practice other organization presentations about adopting policies for behavioral vaccines</td>
</tr>
<tr>
<td>Fiscal crises &amp; cutbacks have increased teacher and family stress, which worsens risk factors</td>
<td>The financial crises hit NJ worse, and those stresses affect children’s risk factors significantly</td>
<td>Promote the adoption universal access policies to IOM prevention strategies that show high-levels of return on investment for state, local and businesses.</td>
<td>Presentations to state &amp; local policy makers, local funders &amp; businesses on fast fiscal benefits of behavioral vaccines</td>
</tr>
<tr>
<td>Federal, state, &amp; local policies focused ATOD prevention on adolescents, well after early hi risk</td>
<td>NJ has not implemented SAMHSA’s policy on the 2009 IOM Report and early ages in 2010</td>
<td>Educate stakeholders, policy makers, local funders, &amp; organizations about implementing IOM report for faster, more cost efficient prevention.</td>
<td>Media and civic promotions for adopting and spreading behavioral vaccines for major benefits</td>
</tr>
</tbody>
</table>

#### Short-Term Outcomes

- Better morale by teachers & staff related to early prevention strategies; 40% to 60% reduced bullying, acts of violence, delinquency, and indicators of DSM-IV disorders;
- 50% to 75% reduction in environment factors of classrooms predicting lifetime student ATOD;
- 10% to 20% more children at grade level reading by 4th grade;
- 30% reduction in referrals for special services including psychotropic meds;
- Near zero first use of tobacco at 6th grade;
- Lifetime alcohol use <10% at 6th grade;
- 30% reduction in service use for problems with behavior, emotions, drugs, or alcohol;
- 40% to 50% reduction in suicidal thoughts and attempts.


44. Eddy JM, Reid JB, Stoolmiller M, Fetrow RA. Outcomes During Middle School for an Elementary School-Based Preventive Intervention for Conduct Problems: Follow-Up Results From a Randomized Trial. Behavior Therapy 2003;34(4):535.


Cited References


