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Updated Inventory of Evidence- and Research-Based Practices: *Washington's K–12 Learning Assistance Program*

Washington State provides funding to school districts to help underachieving students through the Learning Assistance Program (LAP). The 2013 Washington State Legislature directed three efforts to identify effective practices for helping students served in LAP:

- ✓ The Washington State Institute for Public Policy (WSIPP) was directed to "prepare an inventory of evidence-based and research-based effective practices, activities, and programs for use by school districts in the learning assistance program."[1] The updated inventory is displayed on page eight of this report and is also available online.[2]
- ✓ The Office of Superintendent of Public Instruction (OSPI) was directed to "convene a panel of experts, including the Washington state institute for public policy, to develop additional state menus of best practices and strategies for use in the learning assistance program to assist struggling students at all grade levels in English language arts and mathematics and reduce disruptive behaviors in the classroom."[3]
- ✓ OSPI was also directed to "convene a panel of experts, including the Washington state institute for public policy, to develop a state menu of best practices and strategies for intensive reading and literacy improvement designed to assist struggling students in reaching grade level in reading by the end of fourth grade."[4]

The table below summarizes the implementation timeline.

Legislative Assignment	Due Date	Follow-up
WSIPP to develop a LAP inventory of evidence- and research-based practices, activities, and programs	August 1, 2014*	Update every two years thereafter
OSPI to convene a panel of LAP experts to develop a menu of best practices and strategies	July 1, 2015	Update each July 1st thereafter
OSPI to convene a panel of English language arts (ELA) experts to develop a menu of best practices and strategies to help students reach grade level in reading by the end of 4th grade	July 1, 2014	Update each July 1st thereafter

*We advanced the publication of WSIPP's report to July 2014 to align with OSPI's initial deadline.

[1] Third Engrossed Substitute Senate Bill 5034, Chapter 4, Sec. 610(5), Laws of 2013.
[2] http://www.wsipp.wa.gov/ReportFile/1569/Wsipp_Updated-Inventory-of-Evidence-and-Research-Based-Practices-Washingtons-K-12-Learning-Assistance-Program_Inventory.pdf
[3] Engrossed Substitute Senate Bill 5946, Chapter 18, Sec. 206(3), Laws of 2013.
[4] Ibid.

These legislative assignments are similar but distinct. Staff members from WSIPP and OSPI are coordinating the inventory and menu processes to ensure that the results are consistent. In the first half of 2014, WSIPP staff served as non-voting members on the ELA expert panel and provided research findings that informed the panel's deliberations. The expert panel helped WSIPP identify topics for analysis and reviewed topics for inclusion on the inventory when no evaluation research was available. The final classifications of LAP and ELA practices, however, reflect each group's independent judgment.

The expert panel's menu of best practices is presented in a separate OSPI report, which can be found on OSPI's website.[5]

Creating the LAP Inventory

Washington State's Learning Assistance Program was created by the legislature in 1987 to assist underachieving students. In the 2013-15 biennium, the legislature appropriated $415 million for LAP. The funds can be used for a variety of practices, strategies, and activities in K–12 schools, including:

- Tutoring support;
- Extended learning time;
- Professional development;
- Consultant teachers;
- Parent outreach;
- Community-based partnerships;
- Addressing disruptive behavior in the classroom; and
- Services for 8th, 11th, and 12th graders.[6]

WSIPP consulted with legislative staff, OSPI, and members of the expert panel to develop a list of the highest priority topics to investigate for this inventory. We reviewed 33 interventions. Future updates will include additional K–12 strategies, such as behavior, extended learning time, and dropout prevention programs.

Our approach to creating the inventory is the same approach we have used for legislatively directed inventories in other policy areas.[7] The first step is to estimate the probability that various public policies and programs can achieve desired outcomes, such as improving high

[5] http://www.k12.wa.us/TitleI/LAP/panelbestpractice.aspx
[6] RCW 28A.165.035
[7] Miller, M., Fumia, D., & Kay, N. (2014). *Inventory of evidence-based, research-based, and promising practices prevention and intervention services for adult behavioral health.* (Doc. No. 14-05-4101). Olympia: Washington State Institute for Public Policy and EBPI, & WSIPP (2014). *Updated inventory of evidence-based, research-based, and promising practices for prevention and intervention services for children and juveniles in the child welfare, juvenile justice, and mental health systems.*

school graduation rates or student test scores.[8] For each topic, we carefully analyze all high-quality studies from the United States and elsewhere to identify interventions that have been tried, tested, and found to either achieve or not achieve improvements in outcomes. We look for research studies with strong evaluation designs and exclude studies with weak research methods. Using all credible evaluations we can locate on a given topic, we then conduct a meta-analysis to determine the average effect of the program and a margin of error for that effect.[9] These research standards are outlined in the box below.

The second step is to use the results from our analysis of the program effects to determine whether the lifetime benefits of the program exceed the costs to Washington's taxpayers. That is, we conduct a formal benefit-cost analysis.

The third analytical step involves testing the robustness of our results. Any tabulation of benefits and costs involves some degree of uncertainty about future performance. This uncertainty is expected in any investment analysis, whether in the private or public sector. To assess the riskiness of our conclusions, we perform a "Monte Carlo simulation" in which we vary the key factors in our calculations. The purpose of the risk analysis is to determine the odds that the benefits of a particular policy option will exceed the costs. This type of analysis is used by many businesses in investment decision making.

Thus, for each option, we produce two "big picture" findings: expected benefit-cost results (net present values and benefit-cost ratios) and, given our understanding of the risks involved, the odds that the policy will at least have benefits greater than costs.

Standards of Research Rigor for Meta-Analysis

When WSIPP is asked by the legislature to conduct an evidence-based review, we follow a number of steps to ensure a rigorous and consistent analysis. These procedures include the following:

- ✓ We consider all available studies we can locate on a topic rather than selecting only a few; that is, we do not "cherry pick" studies to include in our reviews.
- ✓ To be included in our reviews, we require that an evaluation's research design include treatment and comparison groups from intent-to-treat samples. Random assignment studies are preferred, but we include quasi-experimental studies when the study uses appropriate statistical techniques. Natural experimental designs, including regression discontinuity and instrumental variables, are also considered.
- ✓ We then use a formal statistical procedure, meta-analysis, to calculate an average "effect size" that indicates the expected magnitude of the relationship between the treatment and the outcome of interest. This is how we determine whether the weight of the evidence indicates outcomes are, on average, achieved.

[8] For the inventory, we look for studies measuring outcomes related to the goals of the Learning Assistance Program (to assist underachieving students and reduce disruptive behaviors in the classroom—RCW 28A.165.005). For example, we include studies that measure changes in test scores, graduation rates, grade point average, attendance, and suspensions/expulsions. We do not include studies that measure outcomes that may or may not be related to the change in students' educational outcomes (such as teacher or student satisfaction), if the studies did not also measure the outcomes of interest.

[9] All methods are described in detail in http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf

Classifying Practices as Evidence-Based, Research-Based, or Promising

The legislative assignment directs WSIPP to identify evidence- and research-based practices for LAP. Washington's K–12 laws do not define these terms. The adult behavioral health statutes, however, do provide definitions, and WSIPP recently published an adult behavioral health inventory using these definitions.[10] For the LAP inventory, we use the statutory definitions applicable to adult behavioral health to maintain consistency across policy areas.

We also include "promising practices" on the inventory when the OSPI-convened expert panel and/or the research evidence suggests the practice might improve student outcomes, but the topics did not meet the criteria for evidence- or research-based.

The following definitions are taken directly from the law.

Legislative Definitions of Evidence-Based, Research-Based, and Promising Practices

Evidence-based

> A program or practice that has been tested in heterogeneous or intended populations with multiple randomized, or statistically controlled evaluations, or both; or one large multiple site randomized, or statistically controlled evaluation, or both, where the weight of the evidence from a systemic review demonstrates sustained improvements in at least one outcome. "Evidence-based" also means a program or practice that can be implemented with a set of procedures to allow successful replication in Washington and, when possible, is determined to be cost-beneficial.

Research-based practice

> A program or practice that has been tested with a single randomized, or statistically controlled evaluation, or both, demonstrating sustained desirable outcomes; or where the weight of the evidence from a systemic review supports sustained outcomes [. . .] but does not meet the full criteria for evidence-based.

Promising practice

> A practice that, based on statistical analyses or a well-established theory of change, shows potential for meeting the evidence-based or research-based criteria [. . .].

RCW 71.24.025

[10] RCW 71.24.025. WSIPP's adult behavioral health inventory can be found on our website; http://www.wsipp.wa.gov/ReportFile/1556/Wsipp_Inventory-of-Evidence-based-Research-based-and-Promising-Practices-Prevention-and-Intervention-Services-for-Adult-Behavioral-Health_Inventory.pdf

For each program where research is available, we conduct meta-analysis and benefit-cost analysis to classify practices as evidence- or research-based according to the above definitions. If outcome evaluations exist but the evidence indicates a non-significant effect (p-value greater than 0.20) on desired outcomes in the expected direction, then the program is designated as promising. When we locate no rigorous outcome evaluations for a program, we rely on the panel of experts assembled by OSPI to determine whether the program meets the criteria for promising.

To assemble the inventory, we operationalize each criterion in the definitions. These are the same criteria WSIPP has used in assembling inventories in children's mental health, child welfare, juvenile justice, and adult behavioral health. The criteria are as follows:

1) Heterogeneity. To be designated as evidence-based, the state statute requires that a program has been tested on a "heterogeneous" population. We operationalize heterogeneity in two ways. First, the proportion of program participants belonging to ethnic/racial minority groups must be greater than or equal to the proportion of minority children aged 0 to 17 in Washington. From the 2010 Census, for children aged 0 through 17 in Washington, 68% were white and 32% were minorities.[11] Thus, if the weighted average of program participants in the outcome evaluations of the program is at least 32% ethnic/racial minority, then the program is considered to have been tested in a heterogeneous population.

   Second, the heterogeneity criterion can also be achieved if at least one of a program's outcome evaluations was conducted with K–12 students in Washington and a subgroup analysis demonstrates the program is effective for ethnic/racial minorities (p-value less than or equal to 0.20).

   Programs that do not meet either of these two criteria do not meet the heterogeneity definition.

2) Weight of evidence. To meet the evidence-based definition, results from a random effects meta-analysis (p-value less than or equal to 0.20) of multiple evaluations or one large multiple-site evaluation must indicate the practice achieves the desired outcome(s). To meet the research-based definition, one single-site evaluation must indicate the practice achieves the desired outcomes (p-value less than or equal to 0.20).

3) Benefit-cost. The statute defining evidence-based practices requires that, when possible, a benefit-cost analysis be conducted. We use WSIPP's benefit-cost model to determine whether a program meets this criterion.[12] Programs that do not have at least a 75% chance of a positive net present value do not meet the benefit-cost test. The WSIPP model uses Monte Carlo simulation to test the probability that benefits exceed costs. The 75% standard was deemed an appropriate measure of risk aversion.

[11] United States Census Bureau, 2010. Retrieved from http://factfinder2.census.gov/.
[12] For information about WSIPP's benefit-cost model, see http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf

If a program is not listed on the inventory, we have not yet had the opportunity to review it. If a program is listed on the inventory but does not meet any of the criteria for evidence-based, research-based, or promising, then the program is ineffective or has adverse effects and should not be used if the goal is to achieve one of the desired outcomes, such as increasing student achievement or reducing disruptive behavior.

The LAP inventory is displayed at the end of this report and is also available on our website.[13] Further information on the individual programs contained in the inventory can also be found on our website.[14]

Updates to the Inventory as of September 2014

In August 2014, WSIPP modified the statistical adjustments applied to some types of programs and adjusted its benefit-cost methodology.[15] These adjustments affected the detailed statistical results for each program. Due to these changes, WSIPP reclassified four programs.

Two programs moved from "promising" to "research-based."

- ✓ Parents as tutors with teacher oversight
- ✓ Case management in schools

Two programs moved from "research-based" to "evidence-based."

- ✓ Mentoring for students: School-based (taxpayer costs only)
- ✓ Mentoring for students: School-based (including volunteer costs)

WSIPP added two programs that provide services to English language learners.

- ✓ Special literacy instruction for English language learner students (research-based)
- ✓ Tutoring: By adults, for English language learner students (promising)

Limitations

The benefit-cost analyses in this report reflect only those outcomes that were measured in the studies we reviewed. We focus primarily on outcomes that are "monetizable" with the current WSIPP benefit-cost model. "Monetizable" means that we can link the outcome to future economic consequences, such as labor market earnings, criminal justice involvement, or health care expenditures. At this time we are unable to monetize some relevant outcomes including suspensions/expulsions and attendance.

[13] http://www.wsipp.wa.gov/ReportFile/1569/Wsipp_Updated-Inventory-of-Evidence-and-Research-Based-Practices-Washingtons-K-12-Learning-Assistance-Program_Inventory.pdf
[14] http://www.wsipp.wa.gov/ReportFile/1570/Wsipp_Updated-Inventory-of-Evidence-and-Research-Based-Practices-Washingtons-K-12-Learning-Assistance-Program_Benefit-Cost-Results.pdf
[15] http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf

Future Updates

The legislature directed WSIPP to update this inventory every two years, with the first update due August 1, 2016. WSIPP will produce an additional update by July 1, 2015 to align with OSPI's ongoing work on a menu of best practices for use in the Learning Assistance Program.

Acknowledgments

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September 2014

Updated Inventory of Evidence- and Research-Based Practices: Washington's Learning Assistance Program

More information on the programs and findings can be found by clicking here *

Program/intervention	Level of evidence	Benefit-cost percentage	Reason program does not meet evidence-based criteria (see full definitions below)	Percent minority
Tutoring Support				
Tutoring: By adults, one-on-one, structured	●	87%		72%
Tutoring: By adults, one-on-one, non-structured	P	51%	Weight of evidence/Benefit-cost	66%
Tutoring: By adults, for English language learner students	P	61%	Weight of evidence/Benefit-cost	91%
Tutoring: By certificated teachers, small-group, structured	●	96%		67%
Tutoring: By non-certificated adults, small-group, structured	●	77%		69%
Tutoring: By peers, same-age and classwide	●	76%		68%
Tutoring: By peers, cross-age	◉	83%	Heterogeneity	NR
Extended Learning Time				
Summer learning programs: Academically focused	●	92%		85%
Out-of-school-time tutoring by adults	●	75%		84%
Summer book programs: Multi-year intervention	P	71%	Single evaluation/Weight of evidence/Benefit-cost	95%
Summer book programs: One-year, with additional support	P	60%	Weight of evidence/Benefit-cost	78%
Summer book programs: One-year intervention	P	57%	Weight of evidence/Benefit-cost	86%
Professional Development				
Teacher professional development: Targeted	●	84%		83%
Teacher professional development: Not targeted	⊘	24%	Produces null or poor outcomes	47%
Teacher professional development: Use of assessment data to guide instruction	●	100%		58%
Educator professional development: Use of data to guide instruction ("train the trainers")	P	53%	Weight of evidence/Benefit-cost/Heterogeneity	23%
Teacher professional development: Online, targeted	◉	57%	Benefit-cost/Heterogeneity	31%
Teacher induction/mentoring	P	60%	Weight of evidence/Benefit-cost	88%
Professional Learning Communities	P	NA	Research on outcomes of interest not yet available	NA
Consultant Teachers				
Coaching	●	86%		42%
Coaching: Content-Focused Coaching	◉	68%	Single evaluation/Benefit-cost	96%
Coaching: Literacy Collaborative	◉	89%	Heterogeneity	29%
Coaching: Online	◉	73%	Single evaluation/Benefit-cost/Heterogeneity	27%

Key:

- ● **Evidence-based**
- ◉ **Research-based**
- ⊘ **Produces null or poor outcomes**
- **P** **Promising**
- **NR** **Not reported**

*http://www.wsipp.wa.gov/ReportFile/1569/Wsipp_Updated-Inventory-of-Evidence-and-Research-Based-Practices-Washingtons-K-12-Learning-Assistance-Program_Benefit-Cost-Results.pdf

Program/intervention	Level of evidence	Benefit-cost percentage	Reason program does not meet evidence-based criteria (see full definitions below)	Percent minority
Parent Outreach				
Parents as tutors with teacher oversight	◉	55%	Benefit-cost	58%
Parent and family engagement coordinators	P	NA	Research on outcomes of interest not yet available	NA
Community Partnerships				
Mentoring for students: School-based (taxpayer costs only)	●	79%		78%
Mentoring for students: School-based (including volunteer costs)	●	78%		78%
Mentoring for students: Community-based (taxpayer costs only)	◉	67%	Mixed results/Benefit-cost	80%
Mentoring for students: Community-based (including volunteer costs)	◉	60%	Mixed results/Benefit-cost	80%
Case management in schools	◉	66%	Mixed results/Benefit-cost	76%
Behavior Support				
School-wide positive behavior programs	●	99%		66%
Services for 8th, 11th & 12th Grades				
Credit retrieval	P	NA	Research on outcomes of interest not yet available	NA
Other				
Special literacy instruction for English language learner students	◉	69%	Benefit-cost	98%

Key:

● **Evidence-based**

◉ **Research-based**

⦸ **Produces null or poor outcomes**

P **Promising**

NR **Not reported**

Reasons Programs May Not Meet Suggested Evidence-Based Criteria:

Benefit-cost: The WSIPP benefit-cost model was used to determine whether a program meets this criterion. Programs that do not achieve at least a 75% chance of positive net present value do not meet the benefit-cost test.

Heterogeneity: To be designated as evidence-based under current law or the proposed definition, a program must have been tested on a "heterogeneous" population. We operationalized heterogeneity in two ways. First, the proportion of minority program participants must be greater than or equal to the minority proportion of children in Washington State aged 0 to 17. From the 2010 Census, for children aged 0 through 17 in Washington, 68% were white and 32% minority. Thus, if the weighted average of program participants had at least 32% minorities then the program was considered to have been tested on a heterogeneous population. Second, the heterogeneity criterion can also be achieved if at least one of the studies has been conducted on youth in Washington and a subgroup analysis demonstrates the program is effective for minorities ($p <= 0.20$). Programs passing the second test are marked with a ^. Programs that do not meet either of these two criteria do not meet the heterogeneity definition.

Mixed results: If findings are mixed from different measures (e.g., undesirable outcomes for behavior measures and desirable outcomes for test scores), the program does not meet evidence-based criteria.

Program cost: A program cost was not available to WSIPP at the time of the inventory. Thus, WSIPP could not conduct a benefit-cost analysis.

Research on outcomes of interest not yet available: The program has not yet been tested with a rigorous outcome evaluation.

Single evaluation: The program does not meet the minimum standard of multiple evaluations or one large multiple-site evaluation contained in the current or proposed definitions.

Weight of evidence: Results from a random effects meta-analysis ($p > 0.20$) indicate that the weight of the evidence does not support desired outcomes, or results from a single large study indicate the program is not effective.

Level of Evidence:

Evidence-based: A program or practice that has been tested in heterogeneous or intended populations with multiple randomized and/or statistically-controlled evaluations, or one large multiple-site randomized and/or statistically-controlled evaluation, where the weight of the evidence from a systematic review demonstrates sustained improvements in at least one of the following outcomes: child abuse, neglect, or the need for out of home placement; crime; children's mental health; education; or employment. Further, "evidence-based" means a program or practice that can be implemented with a set of procedures to allow successful replication in Washington and, when possible, has been determined to be cost-beneficial.

Research-based: A program or practice that has been tested with a single randomized and/or statistically-controlled evaluation demonstrating sustained desirable outcomes; or where the weight of the evidence from a systematic review supports sustained outcomes as identified in the term "evidence-based" in RCW (the above definition) but does not meet the full criteria for "evidence-based."

Promising practice: A program or practice that, based on statistical analyses or a well-established theory of change, shows potential for meeting the "evidence-based" or "research-based" criteria, which could include the use of a program that is evidence-based for outcomes other than the alternative use.

Other Definitions:

Benefit-cost percentage: The percent of the time where the monetary benefits exceed costs.

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