7. Conclusions and recommendations

The comparison of the student achievement on two state standardized tests (WASL and ITBS) for two groups of schools (EE and non-EE) and analysis of the results of the survey allow me to state that environmental education could positively affect student achievement in other subjects. According to this research, schools that undertake systemic environmental education programs consistently have higher test scores on the state standardized tests over comparable schools with "traditional" curriculum approaches. The mean percentages of the students who meet standards on WASL and ITBS tests are higher in all six areas in the schools with environmental programs. According to the statistical analysis, schools with EE programs performed significantly better compared to non-EE schools on the state standards tests. There were no EE schools that had lower percentages of students who meet or test above standards in all six areas. Overall, 73 pairs out of 77 project schools had higher scores in ***at least*** one subject.

My longitudinal analysis over 5 years reveals that EE schools had higher mean percentages of students who met standards on the WASL and who were above average on the ITBS for the period of 1997-2002. However, the fact that both groups have similar patterns of change in the test performances over time indicates that there are other factors that affect both EE and comparison schools. Such factors can be changes in the tests themselves, changes in test preparation approaches as well as changes in the state educational policies and regulations, which affect all schools in the state.

Both qualitative and statistical evidence suggests that one factor in the success of these EE schools is the use of environmental education in their curriculum. On a qualitative dimension teams of EE and educational experts rate EE schools higher on EE Rubrics. On a quantitative dimension, survey respondents indicate that EE schools use natural areas more regularly; receive more support from parents, administration and community; teachers have more EE professional training and value EE higher compared to respondents from comparison schools. However, the study indicates a correlation rather than a cause-effect relationship between student achievement and the level of integration of environmental education in the school. I would like to emphasize that environmental education is only one of many possible factors, which affect student achievement and test scores.

Based on my analysis of the research literature and reports existing in this field and the results of the present study some additional conclusions are the following:

1. It is necessary to expand the focus area of EE research. Although there are many studies on the development of environmental knowledge, behavior and attitudes, there are other components of environmental education which require research attention. It is necessary to conduct more thorough in-depth studies on the effect of environmental education on student achievement and on the development of critical thinking skills. Such studies would allow further understanding of environmental education processes, and ultimately, promotion of its benefits. Positive results would provide supporters of environmental education with research evidence about the positive impact of EE on student achievement.

2. More qualitative research should be done. As seen from the literature, about 90% of all educational research in this field is quantitative in nature. Although statistical methods provide good quantitative results, it is necessary to conduct more interviews, and classroom observations. Such qualitative data would be able to provide information that is impossible to capture through statistical functions. In my opinion it is necessary to combine both approaches, because the field needs more in-depth analysis of these programs. If both qualitative and quantitative studies produce the same results, that would indicates that the results are not affected by methodology and are more reliable.
3. In order to make a case for integrated environmental education, more research is needed on the positive impact of integrated programs in general. At the moment there are few such research examples. Both K-12 and higher education are calling for more and better curriculum integration, but good measures of student learning in these educational environments are still lacking.
4. Overall, environmental education needs more theoretical analytical and less anecdotal studies and reports. At the moment, the field of education suffers from a lack of educational theory in general about the development of complex learning environments which attempt to foster complex skills.

To conclude, I believe that the present research provides statistical evidence that one factor in student academic achievement can be implementation of integrated environmental education programs. The results presented in the study suggest the need for further study

of the impact of environmental education on student achievement, and the particular practices within EE that are most promising in fostering such achievement.

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Appendix A.

Environmental Education Rubrics K-12 for school buildings developed by the Environmental Education Consortium

	4 Full implementation	3 Partial implementation	2 Implementation of EE emerging	1 Attempts to implement EE	0 No interest to implement EE
School Building	• At least 3 years practicing EE strategies • 33% school year spent on EE • 20% of teachers/classrooms involved in EE or more • Significant identifiable population of students 20% of more involved in EE	• At least 2 years practicing EE • One unit in school year reflects EE • 10-20% of teachers involved • 20-33% of students involved	• At least 1 years practicing EE • One week in school year focuses on outdoor EE • 1-10% of teachers involved • 10-20% of students involved	• Less than one year using EE strategies • EE found in parts of units. • 1-5% of teachers involved • 5-10% of student s involved	• No attempt to use EE strategies • No apparent attempt to include EE • No apparent EE classrooms • Less than 5% students involved in EE
Curriculum	Curriculum design includes a way to contribute to the community including their environment through their learning. Intentional integrated curriculum design Curriculum design takes advantage of natural areas in school and/or community	Curriculum design includes a study of the natural environment and the link to students lives. Unit design includes other disciplines. Takes advantage of natural areas in school or community	One week or less of experience in a natural setting. Unit design focuses on the science the natural area offers for learning. Planned focus on specific natural area by school or group of teachers.	Curriculum design taking advantage of non-formal sources for curriculum ideas and learning opportunities that address the natural environment. Teachers provide activities using the natural area. Natural areas addressed through individual teachers interest	Curriculum design does not include a study of the natural environment and the link to students lives. No attempt to use natural areas. Natural areas not addressed through curriculum.
Instruction	Teacher teams apparent Classrooms intentionally used as a workshop with teachers as coaches and students responsible for their learning. Clear support from parents, administrators and community	Teacher teams forming Classrooms actively incorporating best practices instruction Growing support from parents, administrators and community	Some teachers collaborate when possible Teachers actively seeking/receiving professional development in best practices instruction Emerging support from parents administrators and community	Teachers largely work on their own ideas. Teachers trying/testing instructional innovations Parent, administrators and community seeking how to support instruction.	No apparent teaming of collaboration of teachers. Teachers focus on direct instruction Parents, administrators and community not seeking to support this type of instructional approach.
Student Learning	Intentional student understanding of EALR's they are learning. Stated policy and implementation	Best practices for student learning apparent in classrooms	One week experience has elements of best practices in learning.	Students get hands-on experience through EE activities	Traditional student learning approach in place

	supporting student learning through best practices				
Assessment	Best practices in assessment in place in policy and practice.	Best practices for assessment apparent in classrooms	One week experience assesses performance.	Students assessed on learning that results from classroom work that includes EE activities	Traditional student assessment approach in place.
Community	Community partners with school as coach, supporter, and provide learning experiences	School has at least two community partners to support EE unit work.	School partners with a community member to provide a one week experience	School aware of teachers working with community supporters for classroom EE work	School may works with community partners on support other than EE.

Appendix B

List of experts (individuals and organizations) participated in school rating

Organization association	**Individual consulted**
Chehalis River Basin Project, ESD 113	Kathy Jacobsen
Tacoma School District	Marlene Rossi
King Co. Parks	Chuck Lennox
Snohomish County	Roger Kelly, Suzie Wong Swint
Belfair	Karen Lippy
Yakima Area School Districts with BOR	Julie Larsen
Vancouver Water Center	Cory Samia
WSU Pullman	Kim Frier
U.S. Forest Service, WA	Susan Thomas
West Valley School District Outdoor Learning Center	Tom Moore
Kennewick Area	Ron Okarma
Wakiakum CISPUS Area	Marty Fortin
Bellingham Area Schools	Wendy Sherrer
Nisqually Basin Area Schools	Chris Maun
Bud Deschutes Area Schools	Debra Wood
Thurston County Schools	Suzie Vanderberg
Seattle Area Schools	Pat Otto
Olympic Peninsula Area Schools	Woody Franzen
Washington Forest Protection Association Schools	Susan Duncan
Model Links Schools 1992-1999	Margaret Tudor

Appendix C

Pairs of schools (EE and comparison) selected for the analysis

Pair_ID	Project School	Location	Comparison School	Location
1	A G West Black Hills High	WW	Anacortes High	WW
2	Alternative Elementary #1	WW	Greenwood	WW
3	Apollo Elementary	WW	Glenridge	WW
4	Artondale Elementary	WW	Canyon Creek Elementary	WW
5	Belfair Elementary	WW	Chimacum Elementary	WW
6	Black Lake Elementary	WW	Purdy Elementary	WW
7	Cedar River Middle	WW	Centennial Middle	WW
8	Challenger	WW	Mcauliffe Elementary	WW
9	Carson Elementary	CW	Stevenson Elementary	CW
10	Cleveland High	WW	Rainier Beach High	WW
11	Concord Elementary	WW	Highland Park Elementary	WW
12	Crestwood Elementary	WW	Jenkins Creek Elementary	WW
13	Daniel Bagley Elementary	WW	Alki (Elem)	WW
14	Discovery Elementary	WW	Totem Falls (Elem)	WW
15	Dry Creek Elementary	WW	Hood Canal Elementary&High	WW
16	Endeavour Elementary	WW	Mill Creek Elementary	WW
17	Environmental & Adventure Middle	WW	Northstar (07-0)	WW
18	Fairview Elementary	WW	Riverside Elementary	WW
19	Frank Wagner Middle	WW	Lyle Middle&High	CW
20	Grapeview Elementary	WW	Lyman	WW
21	Jemtegaard Middle	WW	Rochester Middle	WW
22	McLane Elementary	WW	Evergreen Heights Elementary	WW
23	Lake Wilderness Elementary	WW	Chinook Elementary	WW
24	Issaquah Valley Elementary	WW	Brier Elementary	WW
25	Millennium Elementary	WW	Martin Sortun Elementary	WW
27	Tumwater Hill Elementary	WW	Brownsville Elementary	WW
28	Kennewick High	CW	Moses Lake High	CW
29	Key Peninsula Middle	WW	Eatonville Middle	WW
30	Madison Middle	WW	Baker	WW
31	Michael T Simmons Elementary	WW	Bonney Lake Elementary	WW
32	Monroe Elementary	WW	Stewart Elemenatry	WW
33	Moran Prairie Elementary	EW	Woodridge Elementary	EW
34	Peter G Schmidt Elementary	WW	Hearthwood Elementary	WW

35	Port Ageles High	WW	Shelton High	WW
36	Dearbon Park	WW	Van Asselt	WW
37	Gateway Middle	WW	Washington Middle	WW
38	Goldendale High	CW	Stevenson High	CW
39	Harbor Ridge Middle	WW	Goodman Middle	WW
40	Harbor Heights Elementary	WW	Pinewood Elementary	WW
41	Heatherwood Middle	WW	Harbour Poimte Middle	WW
42	Jefferson Elementary	WW	Progress Elementary	EW
43	Komachin Middle	WW	Cedarcrest Jr High	WW
44	Larrabee Elementary	WW	Columbia Elementary	WW
45	Laurelhurst Elementary	WW	View Ridge	WW
46	Lawton Elementary	WW	Lafayette	WW
48	Lincoln Middle	EW	Mountain View Middle	EW
49	Littlerock Elementary	WW	Gold Bar Elementary	WW
50	Madrona Elementary	WW	Allen Creek Elementary	WW
51	Maltby Elementary	WW	Cottage Lake Elementary	WW
52	Maple Hills Elementary	WW	Clark Elementary	WW
53	Meadowdale High	WW	Edmonds Woodway High	WW
54	Monroe Middle	WW	Post Middle	WW
55	North Tapps Middle	WW	McMurray (Middle)	WW
56	Orchard Middle	CW	Mount Baker Middle	WW
57	Point Defiance Elementary	WW	Sherman Elementary	WW
58	Ridgeview Elementary	CW	McKinley Elementary	CW
59	Roosevelt Middle	WW	White River Middle	WW
61	Schmitz Park	WW	Green Lake	WW
62	Scriber Lake High	WW	Forks High	WW
63	Shelton Middle	WW	Cascade Middle	WW
64	South Colby Elementary	WW	Geneva Elementary	WW
65	Stevens Middle	WW	Blaine Middle	WW
66	Tonasket Elementary	EW	Oroville Elementary	EW
67	Voyager Elementary	WW	Dutch Hill Elementary	WW
68	Wahkiakum High	WW	Best Sr High/ Best Night High	WW
69	Whitman Elementary	WW	Arlington Elementary	WW
70	Hockinson Middle	WW	Chief Kanim Middle	WW
71	Parkview Elementary	WW	Nooksack Elementary	WW
72	Kendel Elementary	WW	Orchards Elementary	WW
73	Washington Middle	WW	Eckstein Middle	WW

74	Woodward Middle	WW	Kopachuck Middle	WW
75	Chase Middle	EW	Lake Stevens Middle	WW
76	Tumwater High	WW	Sequim Senior High	WW
77	Grass Lake	WW	Frank Love Elementary	WW
78	East Olympia Elementary	WW	Emerald Hills Elementary	WW
80	Seth Woodard Elementary	EW	Pasadena Elementary	EW
81	Ness Elementary	EW	Orchard Center Elementary	EW

Appendix D

Demographic comparison (means) of EE and comparison schools

#	Schools	Status	Size	Free Lunch (%)	Ethnicity (%)				
					White	Black	Indians	Asian	Hispanic
1	A G West Black Hills High	Project	968.7	12.1%	90.4%	1.9%	1.5%	3.3%	2.9%
1	Anacortes High	Comparison	849.0	14.9%	91.5%	1.2%	1.3%	2.8%	3.2%
2	Alternative Elementary #1 (k-8)	Project	249.0	28.0%	59.3%	12.5%	8.7%	6.0%	13.5%
2	Greenwood	Comparison	280.3	32.8%	55.8%	12.3%	4.2%	15.7%	12.0%
3	Apollo	project	605.7	8.3%	81.0%	2.2%	0.6%	11.2%	5.1%
3	Glenridge	Comparison	553.7	17.3%	73.2%	4.1%	0.5%	15.5%	4.4%
4	Artondale Elementary	Project	502.7	9.4%	362.1%	6.8%	7.5%	3.4%	3.1%
4	Canyon CreekElementary	Comparison	459.0	11.8%	86.1%	1.8%	1.9%	5.9%	4.3%
5	Belfair Elementary	Project	566.7	30.4%	92.3%	3.9%	2.0%	3.0%	1.8%
5	Chimacum Elementary	Comparison	520.3	33.1%	91.4%	1.6%	2.3%	2.6%	2.1%
6	Black Lake Elementary	Project	535.7	16.9%	93.1%	1.1%	1.4%	2.7%	1.7%
6	Purdy Elementary	Comparison	501.7	15.9%	90.0%	1.6%	1.4%	4.2%	2.9%
7	Cedar River Middle	Project	722.7	12.1%	93.0%	1.2%	1.0%	2.5%	2.4%
7	Enumclaw Middle	Comparison	804.0	13.4%	94.3%	0.5%	1.3%	1.2%	2.6%
8	Challenger Elementary	Project	706.0	1.7%	80.4%	0.8%	0.3%	16.1%	2.5%
8	Mcauliffe Elementary	Comparison	658.0	1.2%	86.4%	1.6%	0.6%	9.9%	1.5%
9	Carson Elementary	Project	268.3	44.6%	88.4%	0.4%	4.5%	0.5%	6.3%
9	Stevenson Elementary	Comparison	237.3	36.1%	88.2%	1.0%	3.6%	3.5%	3.6%
10	Cleveland High	Project	739.0	53.0%	11.5%	32.2%	1.8%	45.5%	9.0%
10	Rainier Beach High	Comparison	749.3	54.9%	8.9%	50.4%	30.9%	32.9%	8.9%
11	Concord Elementary	Project	309.7	80.1%	19.7%	12.7%	4.3%	22.6%	40.7%
11	Highland Park Elementary	Comparison	444.3	65.6%	23.8%	16.4%	4.0%	30.5%	24.9%
12	Crestwood Elementary	Project	600.3	13.7%	83.9%	5.6%	1.2%	4.1%	5.2%
12	Jenkins Creek Elementary	Comparison	547.3	20.3%	86.5%	4.5%	1.5%	4.2%	3.2%
13	Daniel Bagley Elementary	Project	197.7	51.5%	50.3%	16.1%	4.4%	14.9%	14.3%
13	Alki (Elem)	Comparison	339.0	41.9%	46.8%	12.3%	4.6%	27.9%	8.3%
14	Discovery Elementary	Project	718.7	1.5%	90.9%	0.7%	0.8%	6.6%	1.1%
14	Totem Falls (Elem)	Comparison	641.7	2.2%	90.0%	0.5%	1.1%	6.4%	1.8%
15	Dry Creek Elementary	Project	382.7	54.7%	73.4%	2.5%	22.0%	1.1%	1.0%
15	Hood Canal Elementary&High	Comparison	398.3	66.3%	66.5%	0.5%	31.3%	0.4%	1.3%
16	Endeavour Elementary	Project	713.7	5.2%	82.7%	1.5%	0.4%	13.6%	1.7%
16	Mill Creek Elementary	Comparison	674.3	5.4%	80.4%	2.9%	0.5%	13.5%	2.7%
17	Environmental & Adventure Mdl	Project	104.5	1.7%	92.1%	0.6%	1.3%	5.3%	0.9%
17	Northstar (07-0)	Comparison	90.0	2.9%	88.9%	2.6%	0.0%	5.9%	2.6%
18	Fairview Elementary	Project	253.0	25.5%	92.2%	1.6%	4.5%	0.7%	1.1%
18	Riverside Elementary	Comparison	235.0	22.6%	89.5%	1.0%	5.0%	2.5%	2.0%
19	Frank Wagner Middle	project	286.3	26.7%	79.7%	0.9%	1.9%	2.5%	14.8%
19	Lyle Middle&High	Comparison	217.7	35.2%	86.9%	0.9%	6.8%	3.2%	4.1%

20	Grapeview Elementary	Project	185.0	35.8%	90.1%	0.3%	6.8%	2.2%	0.6%
20	Lyman Elementary	Comparison	171.3	35.2%	92.4%	2.0%	2.1%	0.0%	3.3%
21	Jemtegaard Middle	Project	558.0	29.6%	95.7%	0.2%	1.0%	1.7%	1.4%
21	Rochester Middle	Comparison	413.0	47.5%	83.0%	0.8%	5.8%	2.2%	8.0%
22	McLane Elementary	project	301.3	20.1%	84.1%	4.5%	3.3%	4.3%	5.9%
22	Evergreen Heights Elementary	Comparison	280.0	26.4%	79.7%	2.9%	3.7%	5.9%	7.5%
23	Lake Wilderness Elementary	Project	1100.0	10.9%	90.2%	2.8%	1.4%	2.8%	2.8%
23	Chinook Elementary	Comparison	755.0	7.5%	93.3%	1.2%	0.6%	3.2%	1.8%
24	Issaquah Valley Elementary	Project	506.3	10.7%	86.2%	2.7%	0.6%	4.9%	5.7%
24	Brier Elementary	Comparison	500.3	8.7%	86.8%	2.3%	1.2%	4.7%	5.0%
25	Millennium Elementary	Project	527.0	36.3%	65.8%	11.4%	0.6%	15.4%	6.8%
25	Martin Sortun Elementary	Comparison	566.3	31.9%	70.3%	11.4%	1.1%	11.8%	5.4%
27	Tumwater Hill Elementary	Project	452.7	22.1%	84.5%	3.3%	1.9%	7.2%	3.1%
27	Brownsvill Elementary	Comparison	474.3	21.4%	81.0%	5.9%	0.4%	10.4%	2.3%
28	Kennewick High	Project	1530.7	26.5%	77.4%	1.5%	0.2%	1.8%	19.2%
28	Moses Lake High	Comparison	1678.0	27.7%	73.9%	2.1%	0.7%	2.0%	21.3%
29	Key Peninsula Middle	Project	503.3	32.6%	89.4%	1.3%	5.0%	2.1%	2.2%
29	Eatonville Middle	Comparison	475.7	30.8%	93.0%	0.3%	2.4%	1.7%	2.6%
30	Madison Middle	Project	897.0	41.8%	44.3%	11.3%	3.0%	30.9%	11.3%
30	Baker	Comparison	875.0	51.2%	32.4%	16.3%	2.5%	22.1%	6.9%
31	Michael T Simmons Elementary	Project	470.3	29.1%	87.8%	2.0%	3.8%	3.1%	3.4%
31	Breidablik Elementary	Comparison	515.3	22.5%	91.0%	1.0%	1.3%	2.7%	4.1%
32	Monroe Elementary	Project	297.0	39.5%	89.4%	1.1%	4.7%	1.5%	3.2%
32	Stewart Elemenatry	Comparison	290.3	48.6%	81.6%	2.8%	4.4%	3.2%	8.0%
33	Moran Prairie Elementary	Project	526.7	4.2%	92.8%	1.9%	0.6%	4.0%	0.8%
33	Woodridge Elementary	Comparison	457.3	5.2%	94.7%	1.5%	0.6%	1.6%	1.6%
34	Peter G Schmidt Elementary	Project	552.7	40.3%	85.3%	2.9%	3.4%	3.1%	5.3%
34	Hearthwood Elementary	Comparison	575.3	39.9%	86.8%	3.0%	1.5%	2.9%	5.9%
35	Port Ageles High	Project	1568.0	17.0%	89.8%	0.7%	5.3%	2.6%	1.5%
35	Shelton High	Comparison	1534.7	22.1%	83.6%	0.4%	10.2%	2.1%	3.7%
36	Dearbon Park	Project	337.7	73.4%	4.2%	27.9%	1.8%	59.0%	7.2%
36	Van Asselt	Comparison	407.7	76.2%	6.1%	28.7%	0.7%	54.9%	9.7%
37	Gateway Middle	Project	740.7	10.3%	82.1%	2.6%	1.0%	10.7%	3.6%
37	Washington Middle	Comparison	695.3	7.7%	84.3%	0.7%	0.9%	10.7%	3.2%
38	Goldendale High	Project	424.0	27.4%	86.9%	0.9%	4.6%	2.6%	5.0%
38	Stevenson High	Comparison	405.3	23.3%	89.5%	0.9%	3.5%	3.3%	2.8%
39	Harbor Ridge Middle	Project	569.0	11.6%	93.5%	1.6%	0.4%	2.6%	2.0%
39	Goodman Middle	Comparison	582.3	8.7%	90.7%	1.9%	1.7%	2.8%	2.9%
40	Harbor Heights Elementary	Project	569.3	16.2%	87.8%	3.3%	1.3%	4.3%	3.3%
40	Pinewod Elementary	Comparison	592.7	23.7%	86.2%	1.2%	1.6%	5.6%	5.3%
41	Heatherwood Middle	Project	924.7	7.2%	79.0%	2.1%	1.0%	14.2%	3.6%
41	Harbour Poimte Middle	Comparison	816.0	8.6%	81.7%	2.1%	1.0%	13.0%	2.2%
42	Jefferson Elementary	Project	285.3	40.4%	87.0%	2.6%	6.9%	0.8%	2.7%
42	Progress Elementary	Comparison	339.0	44.4%	94.5%	1.9%	1.9%	0.3%	1.4%
43	Komachin Middle	Project	741.3	24.5%	72.6%	8.7%	12.2%	10.8%	5.8%

43	Cedarcrest Jr High	Comparison	828.7	27.9%	70.1%	12.1%	2.1%	10.3%	5.3%
44	Larrabee Elementary	Project	200.3	33.7%	86.6%	0.7%	1.3%	5.1%	6.3%
44	Columbia Elementary	Comparison	223.0	30.1%	90.6%	0.9%	0.9%	3.5%	4.2%
45	Laurelhurst Elementary	Project	414.3	21.2%	66.6%	6.2%	0.7%	18.4%	8.1%
45	View Ridge	Comparison	392.3	24.8%	69.2%	8.5%	1.5%	14.5%	6.4%
46	Lawton Elementary	Project	395.7	17.3%	62.5%	4.3%	1.6%	21.0%	10.6%
46	Lafayette	Comparison	442.0	22.6%	60.0%	11.7%	2.2%	12.8%	7.3%
48	Lincoln Middle	Project	466.0	38.3%	93.3%	1.3%	2.7%	0.9%	1.9%
48	Mountain View Middle	Comparison	507.7	33.0%	94.1%	0.8%	2.8%	1.5%	0.9%
49	Littlerock Elementary	Project	453.7	30.2%	91.4%	1.0%	2.3%	2.6%	2.6%
49	Green Mountain Elementary	Comparison	431.3	31.3%	88.3%	2.3%	3.0%	3.2%	3.3%
50	Madrona Elementary	Project	641.7	8.3%	86.8%	2.6%	0.9%	7.9%	1.8%
50	Allen Creek Elementary	Comparison	638.0	9.8%	85.9%	2.3%	1.3%	7.6%	3.0%
51	Maltby Elementary	Project	523.3	7.8%	90.9%	1.1%	1.6%	3.8%	2.5%
51	Cottage Lake Elementary	Comparison	434.3	5.7%	89.1%	1.0%	2.2%	4.0%	3.6%
52	Maple Hills Elementary	Project	484.3	6.0%	94.3%	0.1%	0.3%	2.8%	2.3%
52	Clark Elementary	Comparison	412.7	7.4%	91.2%	0.6%	0.8%	3.5%	3.8%
53	Meadowdale High	Project	1414.3	9.3%	81.4%	2.9%	1.4%	7.6%	3.2%
53	Edmonds Woodway High	Comparison	1765.7	9.6%	85.2%	2.6%	1.5%	9.7%	3.0%
54	Monroe Middle	Project	755.3	14.3%	91.3%	0.8%	1.1%	2.6%	4.3%
54	Post Middle	Comparison	834.0	12.9%	92.4%	0.7%	1.7%	2.2%	3.0%
55	North Tapps Middle	Project	372.3	3.6%	94.9%	0.5%	0.6%	2.5%	1.5%
55	McMurray (Middle)	Comparison	392.0	9.3%	90.8%	2.0%	1.3%	3.1%	2.9%
56	Orchard Middle	Project	469.3	52.4%	60.2%	0.1%	2.5%	1.2%	36.0%
56	Mount Baker Middle	Comparison	422.3	43.4%	64.1%	1.0%	1.4%	2.7%	30.8%
57	Point Defiance Elementary	Project	456.3	35.1%	81.0%	8.7%	0.5%	5.3%	4.4%
57	Sherman Elementary	Comparison	324.3	41.4%	85.4%	6.9%	0.6%	4.9%	2.3%
58	Ridgeview Elementary	Project	554.3	26.8%	46.1%	1.9%	2.2%	1.0%	48.8%
58	McKinley Elementary	Comparison	416.3	23.8%	48.3%	3.4%	3.7%	0.7%	43.9%
59	Roosevelt Middle	Project	554.0	23.5%	90.3%	0.9%	4.7%	2.2%	1.8%
59	White River Middle	Comparison	616.0	21.4%	93.0%	0.8%	2.9%	1.6%	1.7%
61	Schmitz Park	Project	333.0	23.8%	66.2%	10.8%	3.0%	12.1%	7.9%
61	Green Lake	Comparison	317.3	32.4%	61.3%	15.4%	2.2%	13.8%	7.3%
62	Scriber Lake High	Project	296.7	20.6%	81.4%	5.7%	3.6%	4.1%	5.3%
62	Forks High	Comparison	400.0	21.3%	84.4%	0.2%	7.0%	2.0%	6.4%
63	Shelton Middle	Project	819.0	35.1%	81.2%	0.4%	8.4%	3.7%	6.3%
63	Evergreen Middle	Comparison	917.3	33.1%	82.7%	4.5%	2.4%	5.7%	4.6%
64	South Colby Elementary	Project	485.0	14.2%	92.4%	1.0%	1.9%	3.6%	1.1%
64	Geneva Elementary	Comparison	501.3	17.5%	91.7%	1.2%	2.0%	2.4%	2.8%
65	Stevens Middle	Project	605.3	35.9%	86.8%	1.3%	9.3%	1.1%	1.5%
65	Blaine Middle	Comparison	452.7	36.3%	85.9%	2.3%	3.3%	4.2%	4.3%
66	Tonasket Elementary	Project	526.7	72.3%	72.8%	0.6%	1.3%	1.1%	24.3%
66	Oroville Elementary	Comparison	478.3	68.3%	70.6%	0.6%	4.5%	0.7%	23.6%
67	Voyager Elementary	Project	537.0	8.5%	90.5%	1.0%	2.8%	3.0%	2.6%
67	Dutch Hill Elementary	Comparison	571.0	11.0%	95.6%	1.2%	0.3%	1.1%	1.7%

68	Wahkiakum High	Project	193.7	5.9%	92.7%	0.5%	4.3%	0.7%	1.8%
68	Best Sr High/ Best Night High	Comparison	210.7	3.8%	84.8%	1.9%	1.4%	8.7%	3.1%
69	Whitman Elementary	Project	405.3	72.7%	57.4%	23.0%	1.0%	12.9%	5.7%
69	Arlington Elementary	Comparison	350.7	75.2%	59.5%	17.2%	2.1%	11.6%	9.7%
70	Hockinson Middle	Project	479.0	10.0%	95.8%	0.3%	0.1%	1.2%	2.5%
70	Chief Kanim Middle	Comparison	540.3	12.4%	94.4%	0.6%	1.0%	1.3%	2.6%
71	Parkview Elementary	Project	313.7	35.8%	83.2%	1.4%	2.2%	2.0%	11.3%
71	Nooksack Elementary	Comparison	338.3	37.6%	80.6%	0.5%	3.7%	1.2%	61.7%
72	Kendel Elementary	Project	559.0	64.4%	87.6%	0.1%	3.8%	1.2%	7.5%
72	Orchards Elementary	Comparison	610.0	51.6%	82.6%	5.5%	1.1%	4.6%	6.1%
73	Washington Middle	Project	1022.3	33.8%	44.9%	29.6%	1.6%	18.1%	5.9%
73	Eckstein Middle	Comparison	1208.0	20.4%	56.7%	9.3%	2.5%	23.3%	8.2%
74	Woodward Middle	Project	662.7	5.0%	90.1%	1.4%	1.4%	5.4%	1.7%
74	Kopachuck Middle	Comparison	618.3	5.2%	93.9%	1.4%	0.6%	1.8%	2.2%
75	Chase Middle	Project	908.3	30.1%	87.6%	4.3%	2.2%	3.5%	2.7%
75	Lake Stevens Middle	Comparison	794.3	24.6%	89.7%	1.3%	1.1%	3.1%	4.5%
76	Tumwater High	Project	932.7	16.9%	90.4%	1.3%	2.1%	2.2%	4.0%
76	Sequim Senior High	Comparison	902.3	20.1%	89.0%	0.3%	4.6%	2.7%	3.2%
77	Grass Lake Elementary	Project	412.7	13.2%	92.5%	0.9%	0.3%	3.9%	2.4%
77	Frank Love Elementary	Comparison	461.3	13.7%	86.2%	1.8%	1.7%	5.9%	4.4%
78	East Olympia Elementary	Project	542.7	21.5%	92.1%	0.7%	2.2%	2.9%	2.1%
78	Emerald Hills Elementary	Comparison	619.0	21.0%	93.0%	1.1%	0.9%	1.3%	3.7%
79	Columbia Crest Elementary	Project	174.0	43.7%	94.7%	1.2%	0.8%	1.9%	1.4%
79	Lyman Elementary	Comparison	171.3	33.2%	92.4%	2.0%	2.1%	0.0%	3.5%
80	Seth Woodard Elementary	Project	285.7	41.4%	92.1%	1.7%	2.3%	1.6%	1.9%
80	Pasadena Elementary	Comparison	263.7	28.5%	93.1%	2.0%	1.2%	2.3%	1.3%
81	Ness Elementary	Project	281.3	61.0%	89.7%	1.7%	3.0%	1.3%	4.4%
81	Orchard Center Elementary	Comparison	259.0	59.1%	88.9%	1.6%	4.1%	1.2%	4.3%

Appendix E

Questionnaire

I. Personal Information*

(* - required questions)

Name
_____
Address_____
Organization and Position _____
Phone _____ E-mail _____
Do you wish to receive a set of posters? Yes_____ No _____

II. School Building K-12 Environmental Education Rubric *

(* - required questions)

1-5*. Rate your school building.

1. EE implementation

1a. Number of years the school has participated in EE (*Choose one of the following)*

____ 3 or more years practicing EE strategies
____ 2 years practicing EE strategies
____ 1 year practicing EE strategies
____ Less than one year using EE strategies
____ No attempt to use EE strategies

1b. Amount of school year spent on EE (*Choose one of the following)*

____33% school year spent on EE
____ One instructional unit in school year reflects EE.
____ One week in school year focuses on outdoor EE
____ EE is used in parts of units throughout the year.
____ No attempt to include EE

1c. Percent of teachers/classrooms involved in EE (*Choose one of the following)*

____ 20% (or more)
____ 10-20%
____ 5-10%
____ 0%

1d. Percent of students in the building involved in EE. (*Choose one of the following)*

____ 33% or more
____ 20-33%
____ 10-20%
____ 5-10%
____ Less than 5%

1e. How often are natural areas/outdoors used by your school in the learning process. (*Choose any that apply)*

____ School uses natural areas /outdoors for learning on a regular basis throughout the year
____ School uses natural areas /outdoors for learning seasonally (at least 3-4 times a year)
____ Students do outdoor nature studies for a concentrated few days (1-5 days)
____ A few learning activities involve taking the classroom to natural areas
____ No attempt to use natural areas

2. Curriculum links to outdoors and community (*Choose any that apply)*

____ Teachers adapt curriculum based on students' interests and involve contributions from the outdoors/community, which includes the natural environment/community at each grade level.
____ Teams of teachers design the curriculum to link students to outdoors/community
___ Individual teachers design the curriculum which focuses on specific natural areas or the community for limited time
____ Teachers provide stand-alone activities using natural areas
____ No attempt to use natural areas/community

3. Teaching Practices related to EE (*Choose any that apply)*

____Teachers work together consistently and frequently to design and facilitate EE workshops and projects
____Teachers occasionally work together to design and facilitate EE workshops and projects.
____ Teachers work together just for one integrated EE unit or field trip each year.
____ Teachers work individually or collaboratively to provide activities using natural areas on the school site or in the nearby community.
____ Teachers primarily use didactic instruction
____ Teachers do not teach EE content at all.

4. Instructional Strategies: Describe the style of student learning that is most widely used by teachers in the classrooms at your school. (*Choose one of the following)*

____ Students work in groups on class projects that look at different ways to solve problems
____ Students have an opportunity to make oral presentations on what they have learned.
____ Students generally work by themselves on projects
____ Students focused on learning facts from EE-based activities
____ Students learn using textbooks provided.

5. Assessment. Describe the type of assessment which teachers use in their classrooms most frequently. (*Choose any that apply)*

____ Students assessed through performances, projects, discussions and presentations
____ Students assess their own work, and self-reflect on their learning.
____ Students assessed on what they learn in integrated Environmental Education activities
____ Students assessed through subject area tests only
____ Students tested on material covered in classroom lecture/discussion and assigned reading and homework

III. School building programs
(* - required questions)

Please provide more details about your school building's programs.

6*. What types of programs are there in your school? (Select all that applies)
__ traditional curriculum
__ integrated curriculum program
__ program for gifted/talented students
__ another innovative program, which is _____

7. If there is an integrated program(s) in the school, what are the goals of the program?
_____
_____
_____
_____
8. How many subjects/themes are integrated? _____ Name the subjects/themes_____
_____

9. What grades participate in the programs named above? _____ How many classes? _____

10. In an average week, how many hours does your class spend on special programs such as integrated learning, gifted learning, guest speakers, etc?
___ 0 hours
___ 1-5 hours
___ 6-10 hours
___ 11-15 hours
___ more

11*. Do the students participate in any regional events, festivals or competitions? Which ones?
_____
_____
_____

12. If you work for a middle or high school, what schools feed into yours and what are the strengths of students from those schools?_____
_____
_____

IV. School staff background
(* - required questions)

13. What degree in teaching or other fields do you have? (Select all that apply)
___ Teaching certificate
___ Bachelor's in Education
___ Bachelor's in other areas (specify) _____
___ Master's in teaching or M. ED
___ Master's in other area (specify) _____

___ PhD in Education or Education Leadership
___ Doctorate in Education
___ Other (specify)

14. What is the percentage of teaching and administrative staff of the school in each category (if available).
Master's _____ PhD _____ teaching certificates _____ other _____

15*. How many years of teaching experience do you have? _____

16*. Which assessment reform training or professional development courses have you participated in

Environmental Education Development programs:
___N/A
___Project WILD
___Project WET
___Project Learning Tree (PLT)
___NatureMapping
___ Other
(Please list) _____

Educational Reform& Professional programs:
___ N/A
___ Assessment
___ Integrated Curriculum Development
___ Instructional Strategies
___ Thinking skills
___ Learning styles
___ Other
(Please list) _____

17. What percentage of teachers in your school has attended such courses?

Environmental Education related courses_____ %
Education Reform & Professional Development Programs _____%

18. Are you a member or do you play a lead role on a curriculum development committee? Yes ____ No_____

19. Is there an environmental learning center, a community resource such as a museum, or other formal community partners etc. that participates in the learning process? Yes ___ No___

If yes, which one(s)? _____
_____

V. Your attitudes
(* - required questions)

20*. How has integrated curriculum, including EE, improved your students' learning? (Please describe what factors of your teaching/learning environment you think are making the difference)
in your classroom program _____
_____
_____

at your school building _____
_____
_____

21. What are the long-term benefits of your program for students, community and/or the environment? _____
_____

22*. Describe what support educators involved in this effort receive from
a. administration (school building or district, etc.)_____
_____
b. parents_____
_____
c. community_____
_____

23*. Based on your experience, rate the value of environmental education for the following:

		No Value	Little Value	Valuable	Extremely Valuable
a.	Improve student achievements on standardized tests, like the WASL				
b.	Increase student motivation to learn				
c.	Increase teacher enthusiasm				
d.	Strengthen student involvement in solving community issues				
e.	Strengthen student cooperation and communication skills				
f.	Improve student critical thinking and problem solving skills				
g.	Reduce behavioral problems				
h.	Increase community involvement				
i.	Increase opportunities for family involvement				
j.	Encourage an appreciation/stewardship for natural world				
k.	Improve awareness of environmental issues				
l.	Improve skills to participate in environmental concerns or possibilities				
m.	Develop a sense of citizenship				
n.	Increase student attendance, lowers rates of truancy				

24. What are your top three needs for improving or strengthening environmental education in your program, class, or school? _____
_____
_____

25. What are the three top barriers to improving or strengthening environmental education in your program or class or school? _____
_____
_____

VI. WASL/ITBS Questions*
(* - required questions)

26*. How much class time (%) do you spend on direct preparation for the WASL tests?
___0% __5% __10% __25% __50% __75% _100%

27*. To what do you attribute the changes in the scores on the standardized tests on your school? (select all that apply)
___ teacher professional development
___ changes in categories of students who take the tests (ESL students, etc)
___ changes in test taking procedures
___ changes in instructional practices
___ changes in school policy
___ changes in state policies and regulations
___ other

28*. Please elaborate on the changes (be specific)
_____
_____
_____
_____
_____
_____
_____
_____
_____

VII. Funding and Costs

29. What are the total estimated annual costs associated with running programs in your school (costs of curriculum and material development, teacher and volunteer training, program support, etc. not including teachers salaries, utilities, insurance, school maintenance)? _____

30. In order to determine how the funding is distributed, please indicate the percentage of your school's annual budget (named above) spent on each of the following:
a. Costs of developing curricula _____
b. Cost of developing instructional materials _____
b. Cost of using instructional materials _____
c. Costs of teacher or volunteer training if any_____
d. Costs of maintaining and operating education sites if any_____
e. Costs of supplies and equipment, if any_____
f. Costs of transportation of learners to the field or community-based learning sites_____
g. Other _____

31. If you answered "other" in question 30, please let us know what other costs are associated with running your school programs. _____
_____

32. What percentage of your funding sources for your school programs come from the following
Business donations ___
Foundation grants ___
Individual donations ___
Membership funds ___
Participant fees ___
School, School District, ESD support ___
Federal Agency funds ___
State Agency funds ___
State Grants ___
Other ___

33. If you answered "other" in question 32, please indicate what other sources of funding your **schoo**l has and their percentages

_____
_____

34. What percentage of your in-kind donations/support your **school programs** receive annually come from the following*:*
Volunteer Hours ___
Teacher volunteer hours____
Material Donations ___
Supply Donations ___
Technical Support Donations ___
Other
(specify)_____
_

35. What percentage of school funding (if any) goes to EE programs? _____

36. What percentage of school funding (if any) goes to your classroom program? _____

37. What are the sources of funding for your classroom program? _____
_____
_____
_____

38. How many volunteers are involved with your **classroom**

program?_____

39. How many cumulative hours/year do those volunteers provide for your classroom program? _____

40*. May we use the quotes and information anonymously from your response in the report that we will be preparing? Yes ____ No____

Thank you