

Table 8, Flathead Delphi Survey Round Three Knowledge Statements

Round III: Knowledge								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
K2	Students should be knowledgeable about the plants and animals of the watershed, including invasive species and their impact on the watershed.	0	0	0	5	11	4.69	0.48
K1	Students should be aware why the watershed is important to the species of fish and wildlife that utilize the watershed.	0	0	0	6	10	4.63	0.50
K30	It is important for students to know how humans impact the watershed.	0	0	0	6	10	4.63	0.50
K32	Students should understand the characteristics of a healthy watershed.	0	0	0	6	10	4.63	0.50
K11	Students need to know the basic premise of a watershed, that it is where they hunt and fish and recreate, and work, and live, and eat and grow food and consume food, and that as a result; they are also influencing the watershed with all their everyday actions.	0	0	2	4	10	4.50	0.73
K15	Students should be knowledgeable about the cycles in a watershed.	0	0	0	8	8	4.50	0.52
K27	Geography, landforms, water connections to streams to rivers to lakes are essential concepts for students.	0	0	0	8	8	4.50	0.52
K33	It is important for students to understand that we all live in a watershed and cannot separate ourselves from it, and that our actions can have effects on downstream users, water quality, and aquatic ecosystems.	0	0	1	6	9	4.50	0.63
K39	Students need to have an understanding of the human impact, both positive and negative on the watershed.	0	0	0	8	8	4.50	0.52
K4	Students should be aware that a major threat to the Flathead Watershed is water quality degradation, predominantly nutrient and sediment additions caused by human activities.	0	1	1	4	10	4.44	0.89

Round III: Knowledge

Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
K14	Students should learn that the underground aspects of the watershed are important and that the underground reaches of the Flathead River can be more than a mile from its banks with water flowing in the underground soils and gravels, therefore pollutants entering the watershed in the upper reaches will potentially make their way into the underground river as well.	0	0	1	7	8	4.44	0.63
K20	Understanding what a watershed is and what bodies of water contribute to our watershed is essential knowledge for students.	0	0	0	9	7	4.44	0.51
K43	Students should know the effects on the watershed of our actions; examples are: when we flush, put things down the drain, fertilize our lawns, have oil leaks.	0	0	1	7	8	4.44	0.63
K8	Students should know the unique natural and cultural features of the Flathead Watershed.	0	0	1	8	7	4.38	0.62
K23	It is important that students study the relationship of water quality and economic vitality in the Flathead.	0	0	0	10	6	4.38	0.50
K24	Students should be exposed to the biology and chemistry that relate to the Flathead Watershed, specifically water quality, organisms, ecosystems and diversity within the watershed.	0	0	0	10	6	4.38	0.50
K26	Knowing about the land and landmasses, soil, rock, sediment, mountains, valleys, plains, flood plains, and wetlands is important for students.	0	0	1	8	7	4.38	0.62
K28	The concept that there is one environment, not a "human environment" and a "natural environment".	0	0	2	6	8	4.38	0.72
K35	Management of the watershed for ecological, social, and economic values is important information for students to be aware of.	0	0	0	10	6	4.38	0.50
K37	Students should be aware that there is a finite supply of clean water.	0	1	0	7	8	4.38	0.81

Round III: Knowledge								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
K42	Where the water comes from when the faucet is turned on and how it is treated to be drinkable is important information for students.	0	0	0	10	6	4.38	0.50
K44	Students should be aware of the aspects of water F water cycle, bioregions, watersheds, water bodies (headwaters, streams, rivers, tributaries, marshes, sloughs, lakes, oceans), alluvium, surface water, ground water, downstream, upstream, water pollution (point source, nonpoint source) nutrient load.	0	0	2	6	8	4.38	0.72
K10	A key concept for students would be an understanding of the nature and need for biodiversity.	0	0	2	7	7	4.31	0.70
K47	It is important for students to engage in fieldwork because it is more effective in building enthusiasm, helping with future career choices and fostering stewardship.	0	0	1	9	6	4.31	0.60
K17	Understanding the needs of competing users of water in the Flathead watershed is relevant information, especially with the challenges of climate change in the future.	0	1	1	7	7	4.25	0.86
K31	Students should understand that the stream system is the lifeblood of the watershed; it feeds it and is fed by it.	0	0	2	8	6	4.25	0.68
K51	The history of the Flathead Watershed is important information for students.	0	0	2	8	6	4.25	0.68
K3	Nonnative species (mostly introduced intentionally by managers) are major threats that are important for students to learn about in the Flathead watershed.	0	0	3	7	6	4.19	0.75
K9	It is important to teach about natural environmental change in general.	0	0	3	7	6	4.19	0.75
K21	Students should be aware of the stormwater conveyance system and that storm drains flow directly into our water bodies without treatment.	1	0	1	7	7	4.19	1.05

Round III: Knowledge								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
K34	Knowledge of resources, natural, historical, cultural, land and water use (agriculture, mining, roads, residential, commercial), recreation, conservation, dams, and irrigation is essential information for students.	0	0	2	9	5	4.19	0.66
K48	How the watershed impacts their lives and why they should care about it is essential information for students.	0	0	2	9	5	4.19	0.66
K16	It is important that students learn that a river system affects the whole watershed not only by flowing partially below the surface, but also by how wildlife transfers nutrients from the stream to the upland.	0	0	3	9	4	4.06	0.68
K29	Learning, how has this watershed changed over time, geologic, historic, present, is important information for students to be informed about.	0	0	3	9	4	4.06	0.68
K40	Students should be aware of the international aspects of the Flathead watershed and its reach into Canada, including human impacts, since a watershed does not recognize international borders.	0	1	2	8	5	4.06	0.85
K49	Knowledge gained through what is referred to as "STEM" (science, technology, engineering and math) courses is important to being able to make informed decisions about our watershed ecology and water quality.	0	1	3	6	6	4.06	0.93

ROUND THREE SKILL STATEMENTS

Round III: Skills

Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
S20	Basic scientific inquiry and critical thinking are important skills for students.	0	0	0	5	11	4.88	0.34
S26	Students, when looking to the Internet for information, need to always evaluate the source of information.	0	0	0	6	10	4.75	0.45
S16	Critical thinking is important. Students should be taught how to ask the tough questions and then learn how to look for answers through research.	0	0	0	6	10	4.69	0.48
S1	Scientific investigations involving developing questions, collecting data, analyzing data, and comparing data are skills students should have.	0	0	0	6	10	4.63	0.50
S21	Students should be able to make observations, identify problems, formulate relevant questions, use appropriate tools and technology to collect and analyze data, make inferences, draw conclusions, communicate and defend findings.	0	0	2	4	10	4.63	0.62
S10	A student should be able to interpret data and graphs.	0	0	0	8	8	4.50	0.63
S22	The ability to create tables, picture graphs, bar graphs and picture maps to record and organize information and to be able to read, interpret, and use tables and graphs to identify patterns and trends, draw conclusions, and make predictions are important skills for students to have.	0	0	0	8	8	4.44	0.73
S25	It is important to teach students to look beyond the rhetoric/popular opinion and ask their own questions, as well as how to search for their own answers or solutions provides a life skill.	0	0	1	6	9	4.38	0.81
S28	Listening and observing is an important skill.	0	0	0	8	8	4.38	0.62
S7	Field studies are great.	0	1	1	4	10	4.25	0.58
S8	A student should be able to create, read, and interpret a map, from the schoolyard map to the watershed.	0	0	1	7	8	4.25	0.68

Round III: Skills

Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
S27	Imagination is important to encourage as students think of possible solutions.	0	0	0	9	7	4.25	0.58
S4	Students should be able to know how to delineate a watershed; this means being able to read a map and decide where the ridges are and where the valleys are, and where a droplet of water would flow were it to drop at any point on that map.	0	0	1	7	8	4.19	0.83
S2	Students should begin to conduct "research".	0	0	1	8	7	4.13	0.81
S12	Create homework assignments that require students to investigate their environment.	0	0	0	10	6	4.13	0.62
S11	Observation skills are essential so that students can sit quietly and observe the world around them.	0	0	0	10	6	4.06	0.93
S23	Describing and explaining how biodiversity in animal and plant life affects a watershed.	0	0	1	8	7	4.06	0.77
S13	Students should be able to read maps and landmarks and know the reservation watersheds.	0	0	2	6	8	3.94	0.77
S5	"Nature journaling" or "field journaling" gives young students the tools they need to quietly observe what is going on around them.	0	0	2	8	6	3.69	1.01

ROUND THREE DISPOSITION STATEMENTS

Round III: Dispositions								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
D23	It is important for students to know what they can do to help protect our local watersheds.	0	0	0	7	9	4.56	0.51
D28	Students should realize that all points of view should be treated with equal respect and value, using careful listening skills and asking questions.	0	0	1	8	7	4.38	0.62
D2	Show students how the watershed impacts their lives and how they impact the watershed to create and share a proper attitude of caring.	0	0	1	9	6	4.31	0.60
D4	An appreciation for the natural and cultural history of the Flathead Watershed is an essential attribution for students.	0	0	2	7	7	4.31	0.70
D6	Students should see and feel the need to protect and sustain a healthy Flathead watershed.	0	0	2	7	7	4.31	0.70
D13	It is important that teachers be committed to getting kids outside, for several reasons; first, the lesson takes on life. Second, being at that place establishes a relationship between the student and that site.	0	0	2	7	7	4.31	0.70
D15	It is important to understand the balance between using the land and abusing the land.	0	0	1	9	6	4.31	0.60
D8	For students, developing a sense of appreciation for the Flathead watershed is paramount to instilling a desire to take care of their environment.	0	0	3	6	7	4.25	0.77
D11	Students should understand indigenous perspectives, but also understand more recent ties to the land, including early homesteaders, farmers, loggers, and industrial.	0	0	1	10	5	4.25	0.58
D12	It is important that students develop the concept of conservation and understand the difference between conservation and preservation.	0	0	2	8	6	4.25	0.68
D17	It is important to create a value for stewardship to leave a lasting legacy and a history of protective use, but not abuse.	0	0	2	8	6	4.25	0.68

Round III: Dispositions								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
D27	It is important that students in the Flathead watershed understand that this ecosystem is one of the most intact, with exceptional water quality, and that rivers, floodplains, and aquatic habitats are well connected and functional; and that many similar ecosystems in the lower 48 have been degraded.	0	0	3	6	7	4.25	0.77
D5	For students to develop a strong 'sense of place', they should understand the unique social and environmental history of the Flathead Valley.	0	0	3	7	6	4.19	0.75
D9	Explicitly create learning opportunities that develop real awareness of this remarkable place so that the Flathead environment is not taken for granted.	0	0	3	7	6	4.19	0.75
D10	Creating the next generation of "stewards" is a priceless goal that can be reached through establishing a relationship between the student and the outdoors when students are on the land and by the water.	0	0	3	7	6	4.19	0.75
D19	Teaching students about multiple perspectives is necessary; there are issues such as management of lake trout in Flathead Lake in which not all the stakeholders agree with the tribal point of view.	0	1	0	10	5	4.19	0.75
D1	It is important that students understand the profound wisdom and far reaching implications of the statement: "Whatever happens to the water happens to the people."	0	0	4	6	6	4.13	0.81
D16	Nurturing a balance of use and protection within the watershed, of providing for our needs while caring for the watershed's health, is valuable to instill and develop in students.	0	0	2	10	4	4.13	0.62
D20	History is important to learn about because it shows what human influence has done to the watershed and how it left it today.	0	1	1	9	5	4.13	0.81
D24	Learning about amounts and types of water consumption is relevant for students.	0	0	2	10	4	4.13	0.62

Round III: Dispositions								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
D3	It is important that students engage in life styles (choices and decisions) that protect and sustain a healthy Flathead watershed.	1	0	3	5	7	4.06	1.12
D26	Learning about the local ecosystem will create a sense of stewardship.	0	0	3	9	4	4.06	0.68
D25	Raising student awareness of watershed issues will hopefully influence their future actions in addressing the issues as adults.	0	0	4	8	4	4.00	0.73
D29	Students need to learn to recognize and appreciate their own and other people's values about the same things, like the Flathead watershed; for instance, the values of Native/Indigenous people who have lived here for 12,000 years, families who have lived here for generations, and people who have	0	0	3	10	3	4.00	0.63
D14	Learning from the pioneers who are still living in the Flathead Valley is important, as they are able to provide historical perspective.	0	0	4	9	3	3.94	0.68
D21	Legacy is a great concept to teach and discuss; let students define what they want their legacy of stewardship to be.	0	0	4	9	3	3.94	0.68
D7	Salish, Kootenai and Pend d'Oreille history and cultural resources, such as films and books, have a tribal perspective and are important sources of information on science, history and contemporary information, including topics such as Indian Water Rights and native place names, which should be used in classrooms in the Flathead watershed.	0	1	4	7	4	3.88	0.89
D22	The major issues affecting watersheds today, such as water rights, toxic spills from rail or truck, toxic cleanup, industrial pollution, are important issues for students to learn about.	1	0	3	8	4	3.88	1.02
D18	It is valuable to know the Native American perspectives and to understand how the ecosystem has changed; such knowing could lead to a greater appreciation for the Flathead watershed.	0	2	3	7	4	3.81	0.98

ROUND THREE TEACHING STATEMENTS

Round III: Teaching Methods								
Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
T10	Bringing resource people in as guest speakers is a way to get students interested and engaged.	0	0	0	9	7	4.44	0.51
T5	It would be a science learning experience as well as fun for students to tour the players in our watershed, such as the Forest Service, wastewater treatment plants, storm water programs (the City of Kalispell has such a program), the County Landfill, etc.	0	0	2	6	8	4.38	0.72
T3	A project-based approach would be a way to get students involved in learning the connections between the past and the present.	0	0	1	9	6	4.31	0.60
T7	Appropriate guides should be used for students to learn about the plants and animals in the Flathead watershed, instead of memorizing.	0	0	3	7	6	4.19	0.75
T2	Integration of some of the traditional ecological knowledge that has been passed down through generations of native people might best be incorporated into any learning process by directly engaging the native people in the development of educational and informational programs.	0	1	4	5	6	4.00	0.97
T1	A great Socratic Seminar topic for students could be the statement: "Whatever happens to the water happens to the people."	1	0	5	3	7	3.94	1.18
T4	Teaching about diversity can be accomplished through expression in subject matter teaching. An example is the multiple ways water quality can be introduced: explaining what scientists look for in their work, explaining the cultural importance of native fish and their waterways to indigenous people, or discussing various approaches to resource management of the same water body and why each	0	2	3	5	6	3.94	1.0

Round III: Teaching

Statement Number	Statement	Likert Scale Response					M	SD
		1	2	3	4	5		
T11	Resource education events can and should be conducted outside on the lawns of schools or in neighborhood parks that may be in walking distance.	0	0	7	6	3	3.94	.77
T8	Reading about nonfiction topics is a good way to learn about animals and the watershed and satisfy common core standards requirements for young students.	0	1	7	4	4	3.69	.95
T9	It is possible to address climate change in a neutral way through water and the interconnected nature of surface and groundwater. Precipitation decreases can affect surface flows and groundwater recharge/discharge. If temperature changes the storage of water through decreased snowpack that too can affect groundwater availability as well as surface water flows.	1	1	3	8	3	3.69	1.08
T6	Students can discover 'snow towers' and the progression of snow melt through field trips and via visual presentations.	0	0	8	7	1	3.56	.63