7 Key Elements of Problem-based Learning (PBL) Classrooms

Contents

These elements were created by the Sammamish Collaborative, a 5-year collaboration between Sammamish High School teachers, teacher leaders, school leaders, and our partners at the Institute for Science and Math Education (ISME) at the University of Washington and Knuth Research, Inc. Their development was part of an effort to prepare all students for college and career in the 21st century through changing fundamental structures of school culture and classroom teaching. After a process of reviewing current literature on college and career readiness and on best practices in teaching[1], we decided to use problem-based learning (PBL) as a vehicle for developing rigorous content knowledge and 21st century skills for every student in every classroom.[2]

From the beginning, members of the Collaborative explored various resources about PBL, such as what other schools and districts were doing, various educational organizations and websites, and educational research literature in an effort to find a singular best practice or model that we could adapt for our school. While we found a variety of intriguing, interesting and innovative models, we struggled to find something that we could fit into all disciplines equally – from social studies to math, and world language to physical education. Out of that need, this document, the Key Elements of a Sammamish Classroom was born.

The Key Elements began as a two-page description of principles, and developed over time through an iterative process of drafting, writing, and revision into the current articulation of what each element is and what it looks like in practice. As teams of teachers worked across the school to redesign established curriculum into PBL curriculum, the Key Elements document guided their collaborative efforts, provided them with a philosophical and pedagogical foundation, and was revised through their real-world feedback.

Our school renewal[3] process mirrors a high level implementation of the elements themselves. The *authentic problem* we were trying to solve was to describe high quality PBL implementation that could be applied to any content area or level of student learning. The *authentic assessment* was the degree to which teachers could use this document to improve their practice to increase student ownership and exploration of topics. In order to understand the work, we engaged *expertise* from the University of Washington's ISME and Knuth Research, Inc. We established a shared *academic discourse* to describe all the ways teachers can continue to improve their practice using PBL pedagogy and the ways students engage with PBL coursework. From the beginning this was a *collaborative* process between teachers, with frequent opportunities for *voice* both from teachers in our building and from students who were experiencing PBL in their classrooms. Finally, the implementation of PBL necessitated academic *culture* change throughout the school. That change required all members of the community to confront hard truths about inequities in achievement and to forge new collaborative relationships to make students' classroom experiences more relevant and engaging.

The Key Elements represent our best ongoing effort to capture and articulate a set of values that represent best practice in instruction, and to shift from a traditional teacher-led classroom experience to one that was more student-focused. It was important that we clearly articulated ways the elements were implemented in classrooms as a way to encourage growth over time in what we expect from students and also in how we can continue to improve our practice as teachers. With headings inspired by James Banks's "Levels of Integration of Multicultural Content," we see these as a continuum where all three levels can represent high quality PBL-practice.

As we reflect on five years of work with this document we've had a number of epiphanies as we've thought about including different elements, different dimensions on the continuum, and/or different tools for assessing

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[1] Specific references appear throughout the document.

[2] The development of the Key Elements and the re-design of many Sammamish courses into a PBL format was supported by award #U396C100150 from the US Department of Education's Investing in Innovation (i3) program. This work does not necessarily represent the official views of the US Department of Education.

[3] In his *Phi Delta Kappan* article, "Making Sense of Educational Renewal" (1999) Ken Sirotnik describes renewal as different from reform in that renewal is a process, engaged by individuals within a community, of constant improvement through collaboration and cooperation. Renewal is a process that comes from and is sustained within the school community.

where a course or unit might fall on the scale. What we've learned is that education focused on these elements is really about fostering creativity, communication and leadership in students. We've also learned that the best PBL is both authentic to practices and knowledge with the broader field or discipline and relevant to students and their lives. If a problem is authentic to the world but not relevant to the students, it will fall flat. If a task is relevant to the students but not authentic to the world it can lose rigor and not meet content and skill goals

We have also discovered that the focus on skills and practices in recent national standards documents (Common Core, Next Generation Science Standards), as well as recent re-design of Advanced Placement courses to emphasize depth over breadth, lend themselves to norms in a problem-based classroom. Though finding problems that are authentic, relevant, and aligned with national and state standards can be challenging, we have found that hitting that "sweet spot" yields rewards for both teacher engagement and student learning.

Critical Principles Embedded Within the Key Elements

Although not named as separate or discrete Key Elements, we reference creativity, the creative process, and critical thinking throughout this document. ***Creativity*** and ***critical thinking*** are crucial to developing students who become engaged and thoughtful democratic citizens. Our goal has always been to engender in students the skills many great problem solvers and leaders possess and to do so by building upon the creative ideas and efforts they exhibit every day. Encouraging our students to challenge old paradigms and assumptions and to build on their creative ideas will enrich classrooms and empower students with the skills and habits of mind necessary to help them become leaders of the next generation. Additionally, teaching students how to harness their creative skills and instincts will help them achieve whatever personal or professional goals they set for themselves in life.

Whether students collaborate to design solutions to ocean acidification, redraw district attendance lines, conduct psychoanalysis of Holden Caulfield, or design a catapult for a robot, they are doing so creatively and critically. We believe that in order for students to engage in PBL at the Transformation or Empowerment level, they must demonstrate the ability to think creatively and critically about the content and skills they were asked to learn and the learning process in general.

A Note about Levels in the Continuum

Developing levels of PBL implementation is challenging because it forces us to confront the reality of students' time and energy levels. While we would love to have students take ownership over their learning all of the time, that demands a level of engagement and rigor that can be difficult for students to sustain for six to seven separate classes throughout the school day. It can be equally demanding on teachers as they work to support student learning in such a classroom. In order to support teachers and students toward that end, we inserted a continuum of PBL to provide teachers and students with structure and flexibility as they worked toward more intense PBL classroom experiences.

Integration

In integration, the classroom is still largely teacher-led. The teacher, perhaps with the help of outside experts, identifies the problem students solve and also identifies the form the solution will take. Within that structure, teachers provide students with robust support as they work collaboratively. The outcomes of the project are often tightly linked to specific course outcomes. This kind of PBL is seen in classes that have students who are new to PBL or in classes that have specific outside measures that they are preparing for, like an AP exam. The student expectation in this experience is to work within the structure that the teacher has created and to engage their peers productively.

Transformation

In transformation teachers release more and more responsibility to the students. Teachers will generally identify one of three components of the problem solving: the problem, the process, or the format of the solution. Students will have freedom and flexibility to fit in the other parts in ways that make sense to them. Students critically examine how the problem and solution fit together and negotiate a variety of ways to meet the task.

Students demonstrate a higher level of ownership in the problem-solving process and comfort with the course material. Teachers facilitate students' use of course content, research, and the collaborative process to develop a solution. Teachers also help students develop key meta-cognitive skills by asking them to assess themselves within the creative problem-solving process.

Empowerment

In empowerment, students essentially lead the class. They find the problem, they deliberate and determine a process by which to solve the problem, and they decide what the final product would be. Often, they will also determine whether their final product delivered a good solution to the problem. Students own the work in its entirety. Teachers facilitate an equitable problem solving process and work with students to help them reflect and connect their work to standards. This level of PBL requires the teacher to be very clear on the learning targets and agile enough with them that he/she can constantly adjust his/her teaching methodology to meet the needs of students. Students demonstrate high levels of critical thinking, creativity and an ability to establish a level of responsibility and accountability with peers in collaborative groups.

In practice, we found that at any given time different students in the same classroom were experiencing PBL curriculum at different points on the continuum. While some found a particular activity or problem deeply engaging, others found it contrived or overly complicated. This feedback caused us to shift our thinking to see the continuum as ways that teachers can consider the myriad ways students interact with PBL curriculum, not necessarily as a static description of classroom behavior.

How Teachers Use This Document

Professional Learning Framework

Leaders have used this document to frame professional learning for teachers. We have chosen 2-3 elements as key areas of focus in our summer work and developed capacity in teachers through paid time for literature review and sharing of best practices to dig deep in terms of how to best utilize these elements in their classrooms. We've also used the elements as elements of evaluation for professional learning in terms of how well we are showcasing that kind of teaching and learning through our professional learning as well as in our classrooms. We strive to engage authenticity, relevance, voice and expertise at high levels in all of our work together. The expertise component of the key elements is also a critical feature of the work, how do we build teacher's capacity for expertise such that they are leaders of their own learning? How do ensure that all teachers see themselves as leaders in a process that is co-designed?

Full Year Planning

Teachers use both the text of the key elements themselves and the continuum as they look at their scope and sequence for the year. They sit with the Key Elements as a way to think about the role of authenticity and relevance over the course of the year and think about ways to engage outside expertise in a better way. The continuum encourages teachers to be deliberate in the progression of skill development required to release more and more responsibility of learning to students over the course of the year and to ensure that they are providing opportunities for students to be working at empowerment where appropriate.

As teachers are engaging this planning it is important to note that in any unit, different students will be experiencing the work at all levels of the continuum based on their engagement in the topic, their motivation and their capacity for independent work. The challenge for the teacher becomes identifying how and why certain groups of students might be engaging differently, and increasing ownership, access, and engagement for all. Teachers' use of the continuum helps them think about framing and expectations as well as thinking about differentiation of roles in a given challenge.

Unit Renewal

The key elements are used as a way of gathering and framing student feedback around units. From this feedback, teachers can isolate an element, look at student perception of the element, and strengthen the role of that element in their unit. This is an effective strategy for teachers who have an overall understanding of PBL and use it effectively in their classes but find that there are some units that aren't as successful. By breaking down the unit by key element and offering a way to think about the unit as a whole and what is possible to change in a unit, the teacher has a coherent strategy for renewal and data to help them assess their success.

Lesson Planning

As teachers sit either alone or in collaboration and work on day to day planning of lessons, they have the key elements next to them as an organizing document for their work. As they think through the details of their lesson, they consider whether there is an authentic problem embedded in the lesson that day or how the plan for the day will engage the authentic problem for the unit, how students will collaborate, how student voice will be engaged, how to move assessment to a more authentic place, how students cultures can be a part of the work of the class. Within the context of a PBL unit, this can help ensure that teachers are spending appropriate time and opportunity for students to engage in learning and skill building around each element to foster more students reaching empowerment over the course of the year. Where teachers are not yet ready for PBL, this builds in classroom routines and skills that will foster a readiness for the shift that is very important for future success.

What: Authentic problems are relevant to the lives of students, teachers, and/or to a professional field or discipline. They should reflect the kinds of thinking and problem-solving done by recognizable professionals in the community. They should also be multi-faceted and multi-layered, demanding the cognitive capacity of groups of people to reach a solution. As with real-world problems, there will often be more than one possible solution or solution strategy. As students become more proficient in solving problems, teachers should work collaboratively with students and professionals to identify problems that are increasingly complex and less structured, allowing students to build their skills at identifying, describing, and deconstructing complex, authentic problems.

Why: Authentic, relevant problems increase students' engagement in learning. Students see that their work is meaningful and connected to their own lives and to real professional challenges. Research and experience also tell us that content knowledge can remain dormant unless we are asked to apply it in complex ways. Engaging in creative problem-solving with peers, around truly confounding and complex problems, necessitates high levels of critical thinking, collaborative practice, and creativity. Preparing students to creatively and innovatively solve authentic problems will prepare them to be successful learners in whatever career path they choose.

How: Below are two prominent approaches to establish authenticity in student tasks. In both cases, experts in a given field may visit the classroom and/or collaborate with teachers to provide additional expertise and perspective.

1. *Teachers know the question, students devise the process. The answer is open-ended and allows for multiple perspectives.* Teachers help students assess whether or not they have broken the problem down into the correct component parts; that they have used a process that is consistent with disciplinary best practices, and their response fits the expected range for the problem presented.

2. *Students create the question, create the process, and devise a response.* Teachers and outside experts help students assess whether their response and their process adequately address the question they have posed. In this case the role of expertise and novel resources may be extensive.

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Authentic Problems Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers collaborate with colleagues and seek outside expertise to devise ill-defined problems* that reflect challenges in the field or discipline. Problems have multiple possible solutions or solution strategies. Teachers seek to work with outside experts to develop ideas and give students feedback on their work. Teachers work to develop a long-term relationship with outside experts, allowing them to interact in the course each year to benefit student learning. Experts serve as mentors and as links to careers related to course content and skills. **Students** see ways in which the problem is authentic and relevant to them. They begin developing research and collaboration skills that help them understand the complexity of the problem and how it relates to them. Students are expected to complete the task to a professional standard and are given opportunities to display their work to a wider audience.	Based on their understanding of their subject and their discipline, **students, teachers** and experts work collaboratively to identify and solve ill-defined problems*. The **teacher** serves to align the problem with the content and skill goals of the class, ensures that students receive regular feedback and guidance, but does not direct the outcome of the problem. Because the problems are naturally broad, there is no single correct response and the problems can be tackled from several perspectives and points of entry. **Students** are able to solve increasingly ill-defined* and ill-structured problems. They actively and consciously develop research and collaboration skills that help them understand the complexity of the problem and how it relates to them. Students are drawing on what they have learned either within or between disciplines to most effectively solve the problem.	Based on their understanding of their studies, their community and their resources, **students** develop an ill-defined problem* to solve that currently challenges them. They work in teams to ensure a range of voices and perspectives are represented in the task. They utilize a variety of resources to find and implement a solution. Problems frequently require students to draw on multidisciplinary skills. In addition, students inherently learn the process of failure and innovation as they encounter more sophisticated problems. The problem necessitates community action beyond the classroom with students serving as leaders of that process. **Teachers** help to illustrate the link between problem work and the content and skills required by state and national standards.

*In cognitive theory, every problem consists of three parts: (1) an initial state, such as a question, need, or problem statement; (2) the process of solving the problem; and (3) the end state, such as a solution or product. In an **ill-defined** or **ill-structured problem**, one or more of the three parts is not specified – that is, one or more end states/products/solutions could be possible, multiple processes could be used to solve the problem, etc.

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What: Collaboration is the collective action of groups to solve problems. It is more than just "parallel play," in which individuals work side by side (but somewhat separately) on similar problems. High-quality collaboration is characterized by a set of both *interpersonal* and *project management* behaviors. *Interpersonal* behaviors supporting successful collaboration include active listening to all fellow members; responding to and building on others' ideas; and an ability to resolve conflict. *Project management* behaviors include displaying responsibility to the group (following through on assignments, going beyond simply completing one's individual assignment to see how the assignment adds to the quality of the product as a whole); and awareness of group goals and timelines, including frequent check-ins and adjustments as needed as well as the willingness to take on a leadership role. Collaboration is a learned and teachable skill. In order for students to see the effectiveness of and need for collaboration, and to experience growth in their collaboration skills, the tasks they address should be "groupworthy" – that is, tasks that require multiple members' skills and inputs to successfully develop high quality work.

Why: Collaboration is an essential skill for college and workplace environments. Problems confronted by professionals are often too complex, complicated, and multi-dimensional for individuals to solve in isolation. High level collaboration also often leads to more creative and innovative responses to such problems than an individual could generate alone. For students to be college and career ready, they must develop skills and gain practice with working in teams to solve complex problems and create high quality work products.

How: Successful collaboration requires a classroom culture that prioritizes trust and respect. It also requires physical arrangement of the classroom to facilitate student-student eye contact, conversation, and sharing of materials. Teachers facilitate high-quality collaboration by: (a) emphasizing the need for different types of skills (and thus multiple group members) in order to solve assigned problems/tasks; (b) instituting routines to establish and clarify group expectations and norms; (c) providing vocabulary and other differentiated supports to ensure that English Language Learners and students with disabilities can successfully access problems/tasks and group interactions; (d) purposefully designing group membership so that all students have maximum opportunity to contribute; and (e) scaffolding students' development of project management skills (breaking projects down into sub-tasks, anticipating potential challenges, creating timelines, etc.). As their skills develop, students take increasing responsibility for leading the collaborative work. Throughout the collaborative process, students, teachers, and student and adult experts provide feedback on team member accomplishments, to improve effectiveness and to track achievement of learning goals.

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Collaboration Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers explicitly teach collaboration skills, norms and roles and reinforce them as needed throughout the unit and course of study. Teachers assess both individual students and groups as a whole, and work with students to begin to own the management of their project. Teachers support students' communication and relationship building skills. They provide multiple opportunities for learning, reflection, and re-engagement in the work. **Students** use norms and roles to guide their work. Students are responsible as individuals and as a group for the quality of the collaborative work they complete. Students are directed to operate according to defined roles and norms. In addition to listening and building on each other's ideas, students are also encouraged to build positive working relationships and successfully manage conflict within their groups. They develop the capacity to evaluate their group's interpersonal skills and quality of work.	**Teachers** reinforce that collaboration is a taught and practiced skill, process-oriented, goal-driven and focused on outcomes, and routinely used throughout each unit of study. Teachers coach students on building interpersonal skills, including bridging differences between social groups. They promote project management, including the group setting their own timelines and objectives to complete an assigned task, and support students taking responsibility and holding each other accountable for high quality work. In addition to continuing to improve their interpersonal skills, **students** also begin to engage in more group-directed project management, independent of the teacher. Students seek collaboration as the primary tool by which they solve problems as a result of the course content and in their work in groups. Students develop a shared understanding of mutual accountability in ways they deem authentic and relevant. Students collaborate to establish goals for their work and utilize each other's expertise to continually increase the quality of their work.	**Teachers** and other involved experts are the final arbiters of the *quality* of student work, but students are the final arbiter of the *way* in which high quality work was completed. **Teachers and students** reinforce and refine expectations for creating high quality collaborative work. **Students** establish roles and norms to guide their collaborative work with no prompting or further instruction. Students use norms to navigate differences and obstacles within the group. Students share responsibility in holding each other mutually accountable for learning within the group and to completion of high quality work in response to an authentic problem or challenge cycle. Students effectively monitor the group's progress toward their goals and readjust their plan as needed to ensure full participation by all members. Students' ability to engage in communication that validates and honors the work of each individual in the group incentivizes participation and creates a safe, productive group. Students exhibit the ability to integrate group reflection and processing after the task is complete.

What: Expertise is a process of constant reinvestment of specific discipline-based knowledge and skill to develop increasingly higher levels of knowledge and problem solving skills. Expertise in learning encompasses content knowledge and skill, instructional and learning practice, and accessing the social and cultural capital that exists within a community. Expertise is inherently social and involves seeking out others as questions arise, knowing who to seek out for varied kinds of questions, and sharing one's own knowledge. Expertise can be formal, such as in the practice of the English teacher or surgeon, who have fairly defined bodies of knowledge and who are publicly recognized as experts. It can also be informal, such as in the hobbyist who bakes, plays chess, or skateboards at a high level. Timely and clear feedback from peers and formal experts is critical to the development of expertise.

Why: Continual improvement of skills requires (1) persistent effort, (2) the capacity to both identify needs and seek out appropriate resources, and (3) ongoing facilitation and feedback from both formal and informal experts inside and outside the classroom. Abilities such as perseverance, metacognition, and effective research strategies are essential to success in college and career fields. Students who have opportunities to reflect on and take responsibility as learners for their own successes and failures, as well as to build social and informational resource networks, will be prepared to enter and successfully persist in pursuing college and career pathways. Engaging with professional experts in a variety of fields also holds instruction to a high standard of authenticity and accuracy, relating key content to real disciplinary practices and current authentic problems and questions.

How: Formal and informal expertise exist in teachers, students, parents, industry professionals, and members of local community organizations. Each group has an important role to play. *Students* work independently and collaboratively to reflect on and refine their content knowledge and skill. They also work to develop human and technological networks within and external to the school, drawing on their networks strategically to advance their knowledge. Feedback from peers, teachers, and others may come through formal processes (e.g., assessments, adjudicated presentations) or be through less formal processes (e.g., student created study groups). *Teachers* further their knowledge and skills through individual and collaborative efforts, engaging outside expertise when practical. Consistent and iterative work with other teachers, students, and in diverse contexts leads to high levels of innovative practice. Like students, teachers need timely and accurate feedback from a range of sources, both formal and informal, to advance their expertise. Colleagues, students, subject matter experts and others can provide useful input to further develop teacher expertise. *Community members and industry professionals* work with the school community to make learning and instruction authentic and relevant to the discipline, the classroom, and the student. They help direct student learning and creativity through exposure to innovative problem solving.

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Expertise Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers are the lead experts in the classroom but find ways to move students toward taking on that role at various points of the unit. Teachers collaborate with school-based colleagues and begin to build a network of outside experts and colleagues in the professional practice of their discipline. They consult with members of this network to inspire students towards college and career opportunities and help them make connections between a discipline and its real world applications. **Students** are encouraged to use their developing expertise to guide parts of their learning and to support their peers. Students are also encouraged to monitor and reflect on their own understandings. They work with their teacher, their peers and other experts to close gaps in their understanding and seek out additional supports.	**Teachers** frequently position students as experts by drawing on students' outside experiences and giving them opportunities to research and teach concepts to their peers. Teachers also regularly collaborate with colleagues and local experts engaged in professional practice to broaden shared expertise. This collaboration is reflected in the authenticity of course problems and projects, which represent open questions in professional practice. Teachers collaborate with colleagues and professionals to find new ways to incorporate career readiness into student experiences. While teachers model how to build, maintain and use networks of expertise, **students** build and lead networks of their own through membership in extracurricular activities, digital/electronic contacts, and exposure to professionals. Collaborations with professional experts may lead to internship, mentorship, and shadow opportunities. Students also engage in reflection on their knowledge and skills, allowing them to identify areas of strength and growth. Students form study groups or engage in other collaborations to raise their collective level of achievement.	**Teachers** coach students in building their own networks of formal and informal experts, as well as building leadership and communication skills in a community of learners. Teachers routinely collaborate with other teachers and outside experts to gain deeper content knowledge, broaden their inter-disciplinary knowledge, and perfect teaching practice. They make their classroom practices transparent to colleagues and visitors through practices such as peer observation, Instructional Rounds and analysis of student work. **Student** develop their expertise by collaborating deeply and focusing on developing high quality work. Through reflecting deeply on their learning experiences, engagement and knowledge results in a clear idea of their strengths and their areas for growth. Students share their strengths with peers and seek out resources (people, information, activities) to help them improve areas of growth. Students use their social and information networks to investigate areas of interest, develop their leadership skills and seek out opportunities to increase college and career readiness. **Teachers, students, and community members** interact within the school as expert learners and leaders to further deepen and broaden the knowledge base of the community and hold each other accountable to high standards of intellectual engagement.

What: Culturally responsive instruction (CRI) incorporates the student and his/her background, knowledge, experience, and expertise into both curriculum and classroom practices. "Culture" includes a student's race, gender, ethnicity, and sexual orientation, as well as family, religious, socioeconomic, and other groups to which students belong and in whose norms they participate and value. CRI is *validating* to students in that it moves beyond stereotypes to incorporate students' racial, cultural and social background and knowledge into the content and curriculum of the class. It is *comprehensive* and *multidimensional* in its approach to curriculum because teachers use the community as a teaching resource, sometimes in inter-disciplinary ways that create relevant and sustained connections for students. It is *empowering* and *transformative* for students in that it meets them where they are and gives them the necessary skills to shape democratic discourse and processes locally, nationally, and globally.

Why: All students need educational experiences that prepare them to participate in an ever more diverse global community. Research strongly suggests that when teachers take intentional steps to incorporate students' backgrounds, experiences and expertise into the classroom, they 1) help students make strong values-based connections between school and home, 2) make learning more authentic and relevant to them, and 3) create more opportunities for all students to authentically engage in coursework. Over time, students see themselves as highly valued and active contributors in the school learning community; they value the varied backgrounds and experiences of their peers, and learn to leverage their social and intellectual capital to succeed in the classroom, school, and larger community.

How: CRI is not an add-on to the curriculum, but a perspective that permeates classroom practice regardless of the demographic composition of the school. It involves such things as 1) viewing students' language skills, racial identity, gender identity, and cultural memberships as assets to learning; 2) teachers examining biases or gaps in their own experiences as it relates to classroom instruction and discipline; 3) taking time to know students and learn about their interests outside of school; 4) connecting curriculum content to local issues and/or issues relevant to students' lives; and 5) incorporating historic and current-day examples, experiences, and role models from a variety of cultures and backgrounds. Inclusive practice capitalizes on students' native language and values, as well as helping students navigate the implicit and explicit "rules" of the dominant culture. It gives students from all backgrounds an awareness and respect for diverse social, ethnic, and religious practices.

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Culturally Responsive Instruction Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers make meaningful connections between the content, concepts, themes, and perspectives in the curriculum and students' prior knowledge, experiences, and racial and gender identities. Teachers establish relationships with students' families and support networks outside of school to better align and tailor instruction to students' interests and needs. Teachers discuss students and student learning in ways that evidence sensitivity to and honor students' experiences. **Students** suggest ways assignments and assessments could be modified to capitalize on students' interests and experiences. Students are encouraged to share ways their cultural and social experiences as well as their racial and gender identities connect to the content of class with their peers and teacher. Students understand specific ways in which norms and practices may differ between school, peer, work, and home contexts and clear expectations within each.	**Teachers** adapt the curriculum to enable students to view concepts, events, issues, problems, and themes from the multiple perspectives of diverse groups. Teachers have deep knowledge of the lives of individual students and how those students associate with various racial, ethnic, and cultural groups outside of school. Teachers use that knowledge to 1) adapt the curriculum and modify their instruction and 2) problem solve with other teachers and students' families and outside networks. **Students** are prepared intellectually, socially, and emotionally to work with complex and important problems that ask them to navigate and seek to understand social, cultural, racial, and historical differences. Students are empowered to create meaningful connections between their lives and the content and curriculum of the class. Students participate successfully in the norms of school and workplace settings, as well as in home, peer, and other communities.	**Teachers** work closely with each other and with key community members to develop curriculum and content that spans disciplines and communities within and without the school. Teachers interact with students in ways that evidence deep knowledge of many aspects of students' lives. Teachers actively connect students' experiences and backgrounds as the entry point of learning for all coursework. **Students** respectfully engage each other's historical, social, racial, and cultural backgrounds as a source of their own learning. Students apply and synthesize their understandings to challenge prejudicial beliefs and to engage in dialogue with diverse local, national, and global communities. Students identify important social problems and issues, gather pertinent data, clarify their values on the issues, make decisions, and take thoughtful action to help resolve the issue or problem.

Culturally Responsive Instruction: Defining Key Terms

In our teaching practice we strive to treat every student as an individual, knowing each student brings a unique social, cultural, and historical experience with him or her into the classroom. Each student brings with them a social, cultural, and historical legacy, based in part on their racial, cultural, and social experiences. As educators, we strive to know who our students are as individuals *and* understand how they experience the world as members of larger racial, cultural, and social groups to make learning authentic and culturally relevant to them.

Culture: In describing culturally responsive instruction (CRI) we define *culture* to include a student's race, gender, ethnicity, and sexual orientation, as well as family, religious, socioeconomic, and other groups to which students belong and in whose norms they participate and value.

Race: We use a definition of race that is widely accepted in both social and natural sciences: *race* is a socially constructed concept used to classify people based on the color of their skin. In practice, race is used to identify people as members of particular groups. That process of identification has also been used politically and economically to advantage some groups over others. Because of both the practical and political implications of race, we believe our students experience the world differently based in part on their race.

Ethnicity: Whereas individuals are largely identified as one race or another, even if they don't identify themselves as such, the concept of *ethnicity* is different. *Ethnicity* is how we identify ourselves according to a specific nationality, culture, or common ancestry. Many times others ascribe to us a particular race whereas we identify more with a particular ethnicity. For example, society may categorize a young woman as Asian yet she might identify strongly with her Vietnamese family background. However, to some, race and ethnicity may be very similar. For example, African Americans who identify as Black or Black Americans may be assuming both a racial and a cultural identity.

Sex and gender: We use definitions of *sex* and *gender* from the biological and sociological fields. We use the term *sex* to describe the biological and physiological characteristics that differ between males and females. Much like race, however, *gender* is a socially constructed concept. *Gender* refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women. Individuals may be either male or female, but they may identify more as one or the other or both regardless of their sex. Just as students experience the world differently based on their race, students also may experience the world differently based on how they identify themselves by gender.

Sexual orientation: We follow the definition of the Gay and Lesbian Alliance Against Defamation (GLAAD), which defines *sexual orientation* as "the accurate description of an individual's enduring physical, romantic and/or emotional attraction to members of the same and/or opposite sex and is inclusive of lesbians, gay men, bisexuals, as well as straight men and women." (https://www.glaad.org/reference/offensive)

What: Student voice describes students' ongoing, active participation in curriculum design, leadership, and governance at all levels of a school. Effective schools provide students with opportunities to practice skills in democratic discourse and citizenship. We view the inclusion of a wide range of student voices - regardless of cultural, racial, gender, or linguistic background and disability status - as integral to both how a classroom is structured and how a school is governed. Strong teaching, coaching and modeling around using student voices in class (both in terms of professional learning for teachers and instructional goals for students) will naturally lead students to engage more directly in the governance of the school as they learn the communication skills necessary to have those discussions. Building leadership capacity in students must be a part of the how the school functions at every level. .

Why: Students typically represent an untapped resource of knowledge and expertise schools can utilize to deepen learning and increase engagement. When schools and teachers leverage students' voices and opinions, they demonstrate to students a belief that 1) what students have to say matters to how classrooms and schools are run; 2) youth have expertise and knowledge that teachers can leverage to make instruction more authentic and relevant, 3) students, as a group, can serve as partners in school renewal efforts and initiatives, and 4) students benefit from the kind of leadership, creative problem-solving, and critical thinking skills expected of them when they become citizens of their school community and partners in school leadership and governance.

How: From planning student led presentations, to taking surveys that inform teachers' instructional decisions, to organizing a movement to change policies, there are various ways teachers and schools can elicit, leverage, and develop students' active engagement in designing their own learning process. In the classroom, teachers create predictable and transparent routines to elicit and incorporate student feedback into their teaching (regular opportunities for student choice, input and feedback; surveys following each unit; regular conversations about classroom norms, etc.). In addition, as teachers learn more about students' experiences, communities, and abilities outside of school, they connect course material to relevant and meaningful topics. Students are also deeply involved in the school improvement process more broadly. Over time students become partners with teachers and school leaders to create and sustain a strong social, emotional, and academic culture throughout the school. Outside the classroom, school leaders should also increasingly empower students to take an active role in setting or changing school policies and acting on issues that are meaningful to them and their communities.

Further reading:

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Student Voice and Leadership Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers offer all students a variety of ways to engage (orally, in writing, in small groups, whole class, etc.). Teachers use a variety of methods (choice of activities/topics/assessment methods, surveys, focus groups, small/large group conversations) to regularly and intentionally engage all students in reflection about classroom norms, daily learning experiences, curricular units, and the classroom culture/environment. Teachers are transparent about ways in which they apply student feedback to their instruction. **Students** contribute to the class through a variety of modes offered by the teacher. They see that their prior knowledge and backgrounds are a source of expertise for learning and classroom decision-making. Students are building their capacity to engage in discussion and collaboration about classroom based systems and how those systems can work best for them.	**Teachers** provide a variety of means for student contributions and actively seek out and apply feedback from all students. They use student-generated questions to guide segments of the course, and give students practice with using tools to monitor their own and others' participation. Teachers use peer coaching and peer assessment in structured ways to draw on student voice and leadership in advancing course goals. Teachers intentionally seek out the voices of all students and are intentional in thinking about how they can flatten the power dynamics in their classrooms. **Students** co-construct course content through formulating their own learning activities, questions and through regular opportunities for feedback. Students take responsibility for successful conversations and discussions through initiating topics, making contributions without teacher prompting, and seeking out ideas from peers who have not yet participated. Students are empowered to raise issues with the class outside of teacher-designated times and are encouraged to use their own expertise and experiences to improve the culture of their classrooms.	**Teachers and students** encourage and facilitate student leadership in their classrooms. They build student capacity for reflection, inquiry, and curiosity through the course of solving a problem. **Students** actively ensure that all voices are heard when developing class norms and discussing content. They take responsibility for the learning of the community as a whole, actively seek out opportunities to assist peers inside and outside the classroom environment, and take initiative to provide feedback about classroom norms and culture. **Students** see themselves as changemakers and key stakeholders in their education. They monitor their own learning and use that information to affect the trajectory of their learning within courses and the school. **School leaders** create space for students to hold meaningful positions on school wide governance bodies and also encourage them to use their voice with school district and community decision makers. Students are a part of building strategic vision for the school and also a part of responding to challenges, from truancy to plagiarism to increasing school spirit and pride.

What: Academic discourse includes general and discipline-specific vocabulary, as well as diverse forms of oral and written communication. Key functions of academic discourse include researching, informing, analyzing, comparing, classifying, predicting, hypothesizing, justifying, persuading, solving problems, synthesizing, and evaluating. Students are given explicit opportunities in classrooms to practice each of these language functions in the context of academic content areas. Teachers prioritize peer-to-peer discussion as opposed to traditional I-R-E (inquire-respond-evaluate) discourse patterns. Students also practice diverse forms of communication, including whole class presentation, writing of creative or technical materials, professional e-mail and letter writing, and other methods authentic to a discipline's academic or professional practice. By the end of their four years at Sammamish, students are becoming independent practitioners who are able to communicate as mentors to younger students and as colleagues to industry professionals.

Why: Students regularly use various kinds of formal and informal communication – with teachers, peers, family members, teammates, and others. They also communicate through a variety of means, including telephone, text, e-mail, spoken and written words. Many speak multiple languages throughout a given day. Students who use English competently in everyday conversational settings – both native and non-native English speakers - may nevertheless experience significant challenge in using academic language (e.g., Basic Interpersonal Conversational Skills (BICS) versus cognitive academic language proficiency (CALP)). To help students become colleagues within high school, college, or career communities, they need to understand and purposefully practice appropriate uses of language in academic and professional situations.

How: Language is taught best within a context, as it surfaces in discipline-specific situations. Teachers draw on students' existing language abilities, including everyday forms of talk (e.g., persuading, informing, questioning, predicting) and second language skills, to develop academic communication. Vocabulary and forms of expression are taught using visual and written representations, with multiple opportunities for students to practice, receive feedback, and improve their performance. Teachers help students make explicit distinctions between academic and other communication styles, as well as contexts in which different styles are most appropriately used. As students' skills develop, teachers shift increasingly into a facilitator role. They also provide increasing opportunities for students to communicate with practitioners of various disciplines in authentic professional contexts.

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Solomon, J. & Rhodes, N.C. (1995). *Conceptualizing academic language*. National Center for Research on Cultural Diversity and Second Language Learning Research Reports. Center for Research on Education, Diversity and Excellence, UC Berkeley. http://escholarship.org/uc/item/9802j9tg Accessed 11 January 2013.

Academic Discourse Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers make purposeful use of course vocabulary in class activities and discussions. Teachers teach and model multiple forms of communication appropriate to a discipline and to the specific problem at hand. **Students** take responsibility for developing and maintaining discussion norms that prioritize accurate and appropriate use of vocabulary. Students practice skills in research, presentation, argumentation, listening, analysis, discussion, and/or peer critique as these types of communication become integral in the course of solving problems.	**Teachers** explicitly illustrate the intersection of conceptual vocabulary and habits of mind that will support students in successful learning. Teachers provide opportunities for students to practice and receive feedback on various types of communication within each unit of study, and hold students accountable to increasingly professional standards of expression. **Students** demonstrate their learning, retention, and application of appropriate terms. They also receive assessment feedback and opportunities for practice in multiple modes of communication appropriate to the discipline. Students plan with teachers the forms of communication that are most appropriate for their solutions to a given problem and are assessed on their ability to carry out those plans.	**Teachers** engage students in making their own meaning from words and ways of speaking and support students in further independent exploration. Teachers, students, and expert community members have a comfort level with terms and forms of discourse that allow them to address each other as peers. **Students** help each other learn vocabulary through regular, correct usage. They are able to identify and utilize habits of mind that are taught throughout the course in order to describe what they see and to define problems and communicate their solutions. Students become aware of gaps in their knowledge and skills, and take steps to strengthen these areas.

What: Authentic assessments are measurements of student skills that (a) match the standards and skills being measured; (b) reflect professional standards of high quality work; and/or (c) reflect methods and settings of professional communication, including performances before public audiences. Authentic assessments value *how* students accomplish tasks in addition to the quality of *what* they produce (for example, assessment of collaboration, communication, creativity, precision, and problem solving skills). These assessments are based on articulated state and national academic standards[1], as well as standards of various professional industries. Assessment formats can include presentations, portfolios, writing samples, and research experiences, as well as more traditional formats such as essays and multiple choice exams, provided that the format matches the desired learning objectives.

Why: Completing authentic assessments requires students to engage in collaboration, creative problem solving, and critical thinking. When students know they will present their products to community members and professionals in a field, and/or that the work they do in the classroom relates to real-world issues and students' own development of college and career-ready skills, they are motivated to see meaning in their course assignments. They more readily reflect on their areas of strength and needs for improvement. Using a variety of assessment methods, matched to desired content and skills, also provides more valid measures of student capacity than traditional testing alone.

How: Throughout an instructional sequence, teachers use authentic assessments in ways that are timely, transparent, thoughtful, learning- focused, and specific. Authentic assessments can be used both formatively and summatively. Since learning from academic struggles and, at times, failure are understood to be integral parts of authentic learning experiences, authentic assessment systems provide students with multiple opportunities to demonstrate mastery of key learning objectives, with an emphasis on growth over time. Teachers involve students in reflection and goal setting around their growth in specific content and skill areas. They use grades as a means of communication about student progress, and are transparent with students about how grades are determined and how they can change as student skills improve. Teachers also routinely analyze assessment data in order to continually inform and improve their practice.

[1]For example: Common Core State Standards, Next Generation Science Standards, College Board Standards, EPIC and P21 standards for college and career readiness (see https://www.epiconline.org/Issues/college-career-readiness/the-solution/ and http://www.p21.org/our-work/p21-framework, accessed 20 Jan 2015).

Further Reading:

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Authentic Assessment Continuum		
Integration (Teacher Led, Student Collaboration)	**Transformation (Student Led)**	**Empowerment (Student Initiated and Led)**
Teachers create qualitative and quantitative measures of student performance to ensure connections among the short and long-term learning objectives, the instruction, and the tasks students are asked to do. Taken together, these assessments (formative and summative) measure the students' ability to not only understand, but also apply the content knowledge of the class. Authentic assessments, with a focus on sustained, collaborative inquiry and multiple opportunities to show mastery of specific content and skills, make up the bulk of students' grades. Teachers use assessment data to inform instructional and collaborative practice. **Students** receive detailed rubrics and standards in advance. They are assessed individually and in groups on their ability to understand and apply their knowledge and skills.	**Teachers** and **students** (sometimes in conjunction with expert community members) co-construct appropriate criteria for student solutions to ill-defined, complex problems. Teachers and/or expert community members serve as coaches, providing frequent formative assessment and revision opportunities to help scaffold learning. Teachers are final assessors of student work. Teachers, students, and/or expert community members take responsibility for both group and individual student learning. All three groups use assessment as a measure of skill development over time and as a focus of reflection to inform future learning and instruction.	**Students** consult with **teachers** and experts to devise criteria for assessing problem solutions. Students take responsibility for holding each other mutually accountable to standards of collaborative learning, understanding, and application of content knowledge, using teachers and experts as coaches advising them along the way. **Students** use data to articulate and demonstrate their learning and growth over time in the course. Their self-reflection and metacognition around what they know also plays a substantive role in assessing their overall course performance.

Authentic Assessment: Defining Key Terms

Grading and assessment describe the different forms of feedback teachers use to track student learning and inform students of progress in coursework. Accountability describes both how schools are held responsible for student achievement and how students and teachers are responsible for the success of each other within a community (Wormeli, 2006). However, how teachers use and define each mechanism can vary widely from school to school and teacher to teacher. Ideally, teachers and administrators establish a consensus around what each component means and how each component will be enacted in each classroom. Such consistency provides students with reliable and predictable ways to track the extent of their learning across content areas, providing them with valuable feedback on areas of strength and areas of needed improvement.

Grading: Grading describes the number or letter assigned to student work that signifies the quality of said work. Grading is public communication of student learning and performance in relation to a standard. Grades should highlight the extent to which students understand key concepts and content and master essential skills. Ideally, grading practices are clear, transparent, predictable, and easily discernable by students. Grades should be anchored to highly objective and predictable standards of achievement, providing students with clear and precise feedback on the quality of work they produce. Grades are not an equitable or ethical way to bestow rewards, compensation, punishment, or discipline (Wormeli, 2006). Grading constitutes one way teachers can hold students accountable to established standards of quality and constitute one measure of student learning.

Assessment: Assessment includes all the feedback strategies teachers use to track student learning and inform students of their academic progress in their classwork. Assessment is both summative and formative and it should afford teachers and students an ability to track both students' immediate learning successes and their growth over time. Teachers use *summative assessment* to assess compiled student learning over a given period of time. It includes predictable measures of student learning such as tests, quizzes, essays, portfolio presentations, etc. Summative assessment is both a diagnostic tool used by teachers to assess student learning and affords students the opportunity to show what they know and can do. *Formative assessment* assesses discreet and specific in-the-moment student learning and understanding. Formative assessments can include such strategies as fist-to-five, thumbs-up/thumbs-down, can take the form of checking in with specific students during group work, or may include various more formalized diagnostics of student learning. Typically, teachers use formative assessments to gauge student understanding at a particular moment of time. Informal assessments are typically not assigned a formal grade.

Accountability: Accountability describes the ways in which students and teachers are held responsible for increased student learning and achievement. There are two basic forms of accountability: external and internal. In the United States over the past 20 years, accountability has often referred to an externally positioned system that measures student and teacher performance along specific dimensions. However, accountability can also describe the ways in which teachers and students in a specific classroom, school, or district take responsibility for their own learning and the learning of others. In a healthy system of internal accountability, members within a community hold each other to high standards of performance on a variety of social, intellectual, and behavioral expectations.