The Seattle School District purchased a site in the Beacon View Addition in 1914. This property on South Beacon Hill then sat vacant for almost 50 years. The Van Asselt School Annex opened there in September 1962, with three portables housing students in grades K–3. As years went by, portables and grades were added until, in 1966–67, there were nine portables with grades K–6.

In September 1967, the school reopened its doors as South Van Asselt School, totally independent of Van Asselt School. The next year it shifted to the team-teaching method, except for the kindergarten. Team A had two teachers for the 1st grade. Team B had three teachers for grades 2–3. Team C had three teachers for grades 4–6. The grades within the three teams then varied each academic year.

In 1969, the school was officially named after Wing Luke, Seattle’s first Asian-American city councilman. Born in Kwangtung Province in China, Luke came to the United States at age 6. He attended University Heights, Marshall (where he was president of the Boys’ Club), and Roosevelt (where he was student body president). At the time, Luke and a cousin were the only Chinese-American students at Roosevelt. He was a key player in many political causes in Seattle, including the civil rights movement as an advocate for open housing. He encouraged many Asian-American cultural activities and fought to protect the Pike Place Market and preserve the original atmosphere of Pioneer Square. Tragically, he was killed in an airplane crash in May 1965.
During an open house at the portable school, a dragon made by 10-year-old John Tierney attracted the attention of visitors. It was suggested to the principal that the dragon would be an ideal symbol for the permanent school’s learning resource center. The dragon was depicted by a 9 foot by 3 foot mosaic-tile mural. One of the Pacific Northwest’s most noted mosaic artists, Mary Wightman Bryant, supervised placement of hundreds of tiles made by Wing Luke pupils.

A permanent Wing Luke School opened on the enlarged site in January 1971. The new building was constructed with a capacity of 400 students. It shared with Dearborn Park an “open concept” design, to facilitate team-teaching and individualized instruction.

The Luke family gave the school a brass seal, an enlargement of Wing Luke’s Chinese signature seal. The family also donated a mural for the learning resource center, an abstract painting depicting the ying and yang, symbolically expressing Luke’s incorporation of the best of both Chinese and American cultures into a way of life, according to his sister, Betty Kan.

Today nearly half of Wing Luke’s students are Asian Americans. Some 30 percent of the students are involved in the English as a Second Language program.

All classrooms, excluding kindergarten, feature a mix of grade levels. The building is organized into “pods” shared by two classes. This encourages team-teaching and a sense of community. Students do not leave their regular classrooms for special programs. Rather, the resources come to the children. Core academics are taught to groups of 6–18 children.

Writing has been a strong focus since 1998 when a tutor and mentor program began. Wing Luke is one of several Seattle schools participating in a hands-on science program, part of a district grant from the National Science Foundation. Teachers are required to get training to teach the program, which focuses on experiments and the scientific process.