We consider multivalued linear operators (MLO's) and their resolvents in non reflexive Banach spaces, introducing a new condition of a minimal growth at infinity, more general than the Hille-Yosida condition. Then we describe generalized semigroups induced by MLO's. We present a criterion for a MLO to be a generator of a generalized semigroup in an arbitrary Banach space. Further we give some existence results for differential inclusions with MLO's and various types of multivalued nonlinearities. As a consequence we present theorems on the existence of local, global and bounded solutions of the Cauchy problem for degenerate differential inclusions.