

**David Crystal** (Professor of Linguistic Science, Reading University) combined the research of others to produce an approximate guide to the phonemes which may be used spontaneously in children's speech at different 'Stages of Development'.

**Pamela Grunwell** (Speech & Language Therapist, School of Speech Pathology, Leicester Polytechnic) produced a 'Profile of Phonological Development' showing the stages for emergent and established consonantal phonemes classified by production and related to simplifying processes used by children at the various stages.

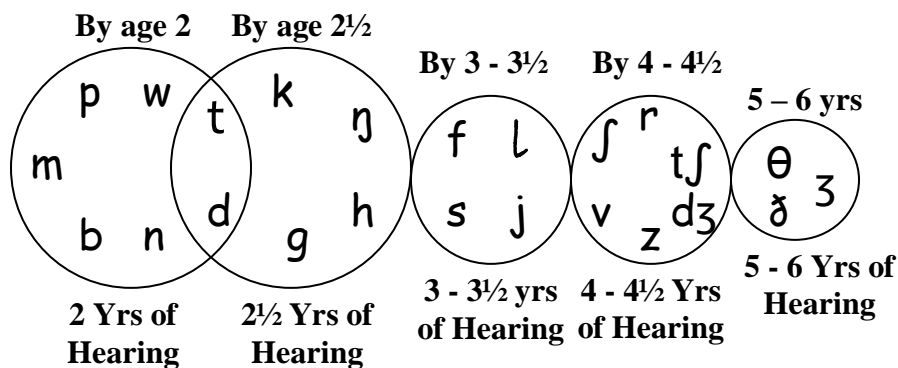
*There is no particular order for phonemes within each stage.*

Others have produced local analyses but these two profiles agree about the likely order for most phonemes. By combining them a fairly reliable prediction may be made.

NB these stages are based on hearing children. It is advised that, when applying them to deaf and hearing-impaired children, the following allowances should be made.

- for **Severely & Profoundly deaf** children, no progress will be made until appropriate hearing aids have been fitted and worn for significant periods every day. The date when this begins will be the comparable date of birth for a hearing child when calculating speech & language development. The time elapsed from this date will be the 'Years of Hearing'. EG a child wears appropriate aids first when aged 1 year 2 months: 2 years later when aged 3 years 2 months, he will have 2 Years of Hearing, so predicted speech & language developmental level would be 2 years (+ or - the 6 months allowed for most assessments). **There should be no speech & language remedial intervention if the Years of Hearing = Age Equivalent for development of aspects of language**
- for children with **Mild or Moderate hearing losses**, progress will be somewhere between 'Years of Hearing' and the 'Stage of Development' because they will have heard some aspects of spoken language before being aided. Once again, intervention with remedial speech & language therapy should allow for this expected delay

## A model of possible phonological development (combining Crystal & Grunwell's profiles)



NB: **t** and **d** appeared as 2yrs in one profile, 2 1/2 in the other

- This is an 'average development' guide – the sounds do not always appear in these stages
- Some phonemes take this long to emerge as the child develops the necessary musculature & control to produce the sound appropriately
- Some phonemes depend on length of exposure (ie frequency heard in everyday life)
- Easily lipread phonemes (eg **f**) may emerge earlier than Years of Hearing may imply. They may be approximated even by children who cannot hear them, as they copy what they see people do.