

THE ORIGIN OF

If you can't explain it simply, you don't understand it well enough

The quote "If you can't explain it to a six-year-old, you don't understand it yourself" (or close variants like "simply" instead of "to a six-year-old", "if you can't explain it simply, you don't understand it well enough.") does not appear to have a single, definitively confirmed author. It is widely and persistently misattributed to Albert Einstein, but extensive checks across quote databases, historical analyses, and biographical sources show no primary evidence that he ever said or wrote these exact words. Instead, it seems to be a modern paraphrase or evolution of similar ideas about simplicity in understanding and explanation that have been expressed by several scientists and philosophers over time.

Key Findings on Origins and Attributions

- **Misattribution to Einstein:** This is the most common claim, but it's unsupported. Wikiquote lists it under Einstein's "Misattributed" section, noting it as a variant of other simplicity-themed quotes. Skeptics Stack Exchange and History Stack Exchange discussions conclude it's likely a distillation of Einstein's emphasis on clear, simple theories, but not his verbatim statement. For example, in his 1933 Herbert Spencer Lecture, Einstein stressed that fundamental concepts should be "as simple as possible," and in his 1949 *Autobiographical Notes*, he advocated for theories grounded in intuitively comprehensible ideas. However, no direct quote matches.
- **Closest Historical Parallel (via Louis de Broglie):** The nearest verified analogue comes from French physicist Louis de Broglie's 1962 book *New Perspectives in Physics*, where he recounts Einstein saying: "All physical theories, their mathematical expressions apart, ought to lend themselves to so simple a description 'that even a child could understand them.'" This is cited in Ronald W. Clark's 1971 biography *Einstein: The Life and Times* as well. Note the use of "child" rather than "six-year-old," and the focus on theories rather than general explanation.
- **Influence from Ernest Rutherford:** An earlier, related idea traces to physicist Ernest Rutherford around the 1920s. Variants include: "An alleged scientific discovery has no merit unless it can be explained to a barmaid" (first documented in a 1924 book by Frederick Smith, 2nd Earl of Birkenhead) or "It should be possible to explain the laws of physics to a barmaid." Wikiquote attributes this to Rutherford, and it's echoed in G.J. Whitrow's 1967 book *Einstein: The Man and His Achievement*. This "barmaid" phrasing may have evolved into more accessible modern versions like "six-year-old" or "grandmother."
- **Association with Richard Feynman:** Some sources swap Einstein for Feynman, but this is also disputed. Wikiquote lists a similar "grandmother" variant under Feynman's "Disputed" section, possibly from a 2000 book by Robyn Williams, but notes it's likely apocryphal. A related anecdote from Feynman's colleagues (1989) describes him saying he couldn't explain a concept "to the freshman level," implying "that means we really don't understand it." Feynman's teaching style emphasized simplicity, which may have contributed to the misattribution.

- **Other Variants and Influences:** Broader ideas about clear explanation appear in works by philosophers like Daniel Dennett (2013: "If I can't explain something I'm doing to a group of bright undergraduates, I don't really understand it myself") and Peter Singer (2016: "Whatever cannot be said clearly is probably not being thought clearly either"). Even earlier, a 1921 interview with Einstein mentions explaining relativity "to a first grader," but again, not the exact quote.

Earliest Known Appearances of the Exact Quote

No definitive "first" publication has been traced for the precise "six-year-old" wording. It starts appearing in print and online around the late 20th century, often without sources (e.g., Goodreads tags it as "attributed-no-source" to Einstein). By the 2010s, it proliferates on social media, blogs, and motivational sites, solidifying the Einstein link despite lacking evidence. Quote Investigator and similar fact-checking sites suggest it's an apocryphal adage that amalgamated older sentiments.

In summary, while the spirit aligns with Einstein's philosophy of simplicity, the quote as we know it is likely an unattributed modern invention drawing from Rutherford's barmaid idea, de Broglie's recounting of Einstein, and Feynman's teaching ethos.