

Compressed Speech - Another Educational Tool: Boon Or Bane?

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In our technological age, instructional devices are periodically offered as a boon to educators who are constantly searching for new ways to improve their teaching. Usually, we are hyped to all the obvious benefits of these developments; seldom are we apprised of their actual or potential limitations, drawbacks, and pitfalls.

Another offering to the promised land is upon us and warrants closer examination. The Instructional Resources Center (IRC) has had speech compression technology available to St. Paul Campus faculty members since 1971. The IRC has worked with more than 20 faculty members and 11 departments in identifying the utility and value of compressed speech. Since 1972-1973, the IRC has had available both a Vocom and a Lexicon Varispeech Compressor. These compressors are available for further experimentation and utilization by university staff.

This article outlines: (1) the historical development of compressed speech; (2) claimed benefits of speech compression; and (3) potential limitations of speech compression. The article presents pro and con information about speech compression technology to help teachers decide whether compressed speech is a clearcut boon or bane.

A brief history and the underlying principles of speech compression

Communication research indicates that the average human speech speed ranges from 125 to 180 words per minute (wpm). Although it is possible for lecturers to consciously speak between 200 and 300 wpm, the general listening experience of college students remains in the 100 to 200 wpm range.

Furthermore, research indicates that individuals can "listen and comprehend" oral material at up to 400 wpm without substantial loss of comprehension. Consider these factors together with five academic realities: (1) the lecture continues to be the predominate method of instruction in higher education; (2) in most speciality areas, there is an increased quantity of information to be presented; (3) the majority of teachers' lectures run at the tortoise rate of 125 to 180 wpm; (4) students have the hare capability of listening at a significantly faster pace; and (5) this listening-speech speed differential may impact adversely on the learning effort. Thus, we see the underlying presumption of need for speech compression—increased efficiency and effectiveness.

Established in 1950, compression of speech is a new technology. Two primary systems of speech compression have been developed. Systematic deletion was developed first; it is essentially the systematic deletion of alternate 1/4-inch sections of a taped message. Research indicates systematic deletion is effective to 60 percent compression without significant change in pitch or loss of comprehension.

Selective deletion is the second method; it is accomplished by drastic reduction of pauses and/or shortening of vowels. Proponents claim that the selective deletion technique allows compression of 30 to 40 percent of the original delivery time without perceptual error.

Claimed benefits (boon) of compressed speech

Whichever technique is utilized, the claimed benefits are similar. Educators are promised that: (1) educa-

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'Manny' Steil says most teachers' lectures run at a tortoise rate while students have a hare capability of listening.

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tional objectives can be accomplished; (2) students can cover the same material in less time or more material in the same time (efficiency); (3) lecture material can be covered outside of class (efficiency); (4) students' attention and interest will be heightened (effectiveness); and (5) there will be effective comprehension and retention of message (effectiveness).

Numerous independent researchers have confirmed these claims in controlled research. Based on the bulk of available reports, compressed speech offers all boon and no bane. Are there any limitations to compressed speech?

Potential limitations (bane) of compressed speech

Because published materials cite few limitations of compressed speech, I offer two potential limitations.

First, there is the question of who controls the degree of compression. Should the instructor record his lecture, determine the specific percentage of compression, and force a single compressed rate message upon all students? Or should the instructor allow each student to determine the degree of compression individually?

A significant argument supporting mediated educational opportunities is each student benefits from the opportunity to proceed at his individual optimum pace. Although not conclusively determined, it seems reasonable that each student has an individual optimal listening-learning capacity. If so, compressed lectures may prove ineffective if they are not controlled by the individual student.

The second potential limitation may be more severe. It relates to selective deletion and potential altera-

tion of message meaning. Selective deletion compression is based on the selective elimination of speaker pauses and shortening of speaker vowel sounds. Central to the second potential limitation is that such selective deletion arbitrarily eliminates all pauses without distinguishing the nature of the pause.

Research supports claims that selective deletion compression of speech permits the speaker's original pitch, tone, and voice character. Moreover, research indicates that essentially 100 percent intelligibility occurs up to 65 percent compression. Nevertheless, educators should consider the potential alteration of message meaning.

Most educators contend that their lectures are primarily oriented to information transfer with minimal orientation toward persuasion. To the contrary, however, the majority of educational lectures includes significant elements of persuasion, even though the persuasion may only be oriented towards persuading students that selected information is important and/or more important than other information.

Regardless of the informational/persuasive content ratio of lectures, one factor appears clearly related to the use of compressed speech—The pause has meaning when used in a controlled manner. Lecturers consciously utilize pauses in a planned manner, so compressed speech can potentially alter the intended meaning.

Speech compression ignores such logical intent by its unilateral selective deletion of all pauses. The selective deletion process of speech compression eliminates all pauses. By not making

the desired distinction between the controlled meaningful pause and the uncontrolled, unplanned, empty pause, compressed speech may alter the message content and the lecturer's desired intent.

Either potential limitation may be impactful in varying degrees. The problem should be minimal where the class range of student listening-learning capacity is relatively narrow and is matched with the lecturers' selected compressed speed and where the lecturer has not utilized the pause for significant meaning. However when the opposite is true, the problem may be quite significant.

To offset these potential limitations, two suggestions are offered. First, lecturers should not determine the pace of students' compressed listening material. Each student must control and determine his own degree of compression and the resulting listening pace. Finally, lecturers must become more analytical of their lecture intent and message content to determine the importance and value of meaningful pause inclusion. If a significant portion of a lecturer's meaning is consciously developed utilizing the controlled pause, he must understand the implications of compressed speech methodology. Boon or bane?—let's look beyond the obvious benefits!

In conclusion, it is obvious that there are numerous significant advantages of utilizing compressed speech in advancing our teaching efforts. These advantages need to be explored and maximized. In addition to the advantages, there may be significant limitations. Boon or bane?—let's build on the positive while we become aware of and overcome the limitations!