

# Academic and Conversational Language Approaches to Teaching Science – Towards a critical balance

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## Abstract

We live in an era of unprecedented scientific progress. The growing impact of technology has brought science ever more into our daily lives. Information about science is necessary to make educated decisions in a world dominated more and more by technological progress and can directly influence the quality of people's lives. At this juncture, the investigator finds that usage of 'language type' that is common language or technical language plays a vital role in transacting the ethos of science at school level. Science is full of technical terms, hence the overemphasis on merely technical terms without common language usage does not communicate the essence of the concept. In this theoretical article the researcher outlines the disadvantages of overemphasis of technical terms during teaching learning process at school level. This study also elaborates pros and cons of both approaches in isolation with scientific justification. This paper set out to cast light on both the approaches to teaching science with theoretical background.

**Key words:** Academic language, Conversational language, Teaching science.

## Introduction

A major challenge to students learning science is the academic language in which science is written. Academic language or scientific language is designed to be concise, precise, and authoritative. To achieve these goals, it uses sophisticated words and complex grammatical constructions that can disrupt reading comprehension and block learning (Catherine, 2010).

Usage of most sophisticated and precise scientific language without conveying its meaning and importance is academically futile task, hence the meaning of the science or science communication must be conversed in the conversational language. It is also equally important to gradually enrich students' academic language as the students move on to higher education. At this juncture, the present article details about how one can teach science meaningfully using both scientific and conversational language. In this article, the academic language is considered as technical language and conversational language as common language. Most of the time text books are written in academic or technical language, which makes it difficult to comprehend for the average student.

This article provides a brief description and analysis of activities that support or constrain students' control of this specialized language.

## Background

Academic language has been described as the specialized set of words, grammar, and organizational strategies used to express complex ideas, higher order thinking processes and abstract concepts (Zwiers, 2008). Shortly before Halliday's introduction of Systemic Functional Linguistics (SFL), Dell Hymes was instrumental in promoting the relationship

between language and social contexts. In response to Noam Chomsky's distinction between language competence (knowledge of grammatical rules necessary for understanding and producing language) and performance (the use of knowledge within particular contexts), Hymes proposed the notion of communicative competence, or knowledge necessary to use language within social contexts. The insight of Hymes promoted a broad view of linguistic studies, intersecting language, culture and society (Bucholtz & Hall, 2005). They depicted academic language as that which relies on "broad knowledge of words, phraseology, grammar, discourse structure and pragmatic conventions for expression, understanding and interpretation". Recent research has developed conceptual models that differentiate language expectations of school with the language that a student brings from home and community. Solomon and Rhodes (1995), while stating that there was a distinct language of school that differed from that of home and community and the lack of its usage hindered the academic progress of many students, sought to clearly conceptualize this language in order to provide an analytical tool for teachers who sought to provide access to it.

## **A Critique of both academic and conversational language**

### **Academic Language of Science**

Science, like each school discipline, produces an embedded language that reflects its goals, systems and practices (Lemke, 1990; Martin & Veel, 1998). Lemke (1990) spoke of the particular difficulty some students experience when faced with the academic language of science:

How does science teaching alienate so many students from science?

How does it happen that so many students come away from their contact with science in school feeling that science is not for them, that it is too impersonal and inhuman for their tastes, or that they simply 'don't have a head for science'?

One way this happens, I believe, is through the way we "talk" science. The language of classroom science sets up a pervasive and false opposition between a world of objective, authoritative, impersonal, humourless scientific facts and the ordinary personal world of human uncertainties, judgments, values, and interests.

Despite its inaccessibility, Wells (1992) emphasizes the role of academic language of science and the importance of discourse with its "essential role to play in mediating the pupils' apprenticeship into the discipline...as an opportunity for 'talking their way' into ways of making sense of new information".

### **Linguistic Features of Science Texts**

Schleppegrell (2008) also suggests four features within the language of science that support the representation of scientific knowledge: technicality, abstraction, tightly knit structure and lexical density. Technical and abstract wording. Technical and abstract wording helps to encapsulate science concepts in precise and accurate fashion. Technical words are those that are often found in bold lettering and included in a science text's glossary such as "penumbra" or "lithosphere." It is common for teachers to draw attention to these words, discussing them before or during the reading of the text and assessing them at the end of the unit. Hence, students need help in learning academic vocabulary and how to process academic language if they are to become independent learners of science. Among the most commonly noted features of academic language are conciseness, achieved by avoiding redundancy; using a high density of information-bearing words, ensuring precision of expression; and relying on grammatical processes to compress complex ideas into few words.

## The Development of Models of Academic Language

Butler, Bailey, Stevens, Huang, and Lord (2004) reviewed textbooks and standards documents to develop a model of academic language for the Center for Research on Evaluation Standards and Student Testing. Their model includes both descriptions of specialized vocabulary and depersonalized writing that includes comparative descriptive words, use of subordinate clauses and nominalizations. They identified differences in the academic languages associated with various subject areas noting the expository writing of science and the succinct imperative sentences of mathematics texts.

The researchers called for collaboration between researchers and practitioners in order to make a positive contribution to classroom teachers' understanding of strategies to promote the appropriation of academic language. In response, several researchers have sought to clearly identify aspects of academic language in the form of a model that could be used by both researchers and practitioners. Recent research has developed conceptual models that differentiate language expectations of school with the language that a student brings from home and community. Solomon and Rhodes (1995), while stating that there was a distinct language of school that differed from that of home and community and the lack of its usage hindered the academic progress of many students, sought to clearly conceptualize this language in order to provide an analytical tool for teachers who sought to provide access to it.

### Implications of both the approaches together and isolation

Academic language gives definite understanding of the concept with lexical density, and tightly knit structures. While conversational language truly imparts the essence of the concept. To become a real scientific and global citizen a teacher has to adopt both the approaches appropriately. Some examples are here.

Normal wording: If a fire burns more intensely, it gives off more smoke.

Scientific wording: Fire intensity has a profound effect on smoke emission.

Scientific wording: Their grazing helps keep sea grass beds thick and healthy for fish, crustaceans, and mollusks.

Scientific wording: Conversion of solar energy into chemical energy is called photo synthesis.

Normal wording: Reaction of water and carbon dioxide in the presence of sunlight gives food called glucose in green leaves.

### Conclusion

A major challenge to students learning science is the technical language in which science is written. Technical language is designed to be concise, precise, and authoritative. While technical words can interfere with students' understanding of science texts, the example shows how abstract wording common to science texts also contribute significantly to a text's complexity. Conversational language, on the other hand, such as that used in e-mails, resembles oral language forms more closely: Most sentences begin with pronouns or animate subjects; verbs refer to actions rather than relations; and long sentences are characterized by sequencing of information rather than embed. So teaching science requires both the languages appropriately so as to equip students with scientific vocabulary which give precise and definite thought and conversational language to convey true essence of science communication for native language speakers.

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