CHAPTER 1

MISINFORMATION AND DISINFORMATION IN EDUCATION

An Introduction

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Today, like no other time in our history, the threat of misinformation and disinformation is at an all-time high. This is also true in the field of education. This book provides recent examples of how misinformation and disinformation manifest in the field of education and offer remedies.

To understand the nature of misinformation and disinformation in education, it is important to agree on basic definitions. We draw on recent work

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in communication sciences, psychology, and education to provide some clarity. *Misinformation* refers to false information that is shared by a source who has the intent to inform, but is unaware that the information is false or inaccurate (e.g., a false connection, a wrong interpretation, a myth, or a misconception; Waerdle & Derakhshan, 2017). For example, many educators tell students that underlining or highlighting is an effective learning strategy when in fact it has low utility as a learning strategy when used in isolation (Dunlosky et al., 2013). *Disinformation* refers to false information (e.g., manipulated or fabricated content, misleading information) that is shared by a source who has the intent to deceive and is aware that the information is false (Lazer et al., 2018). For example, some politicians claim that high-stakes testing, combined with teacher and principal accountability systems, will fix K–12 education when in fact there is no evidence to support this practice, and is thus misleading. *Fake news*, a type of disinformation, refers to "fabricated information that mimics news media content in form but not in organizational process or intent. Fake-news outlets, in turn, lack the news media's editorial norms and processes for ensuring the accuracy and credibility of information" (Lazer et al., 2018, p. 1094). Unfortunately, the term has also been used by politicians around the world to describe news organizations whose coverage they find disagreeable.

These definitions raise an important question; namely, how do misinformation and disinformation manifest in education? To address this question, we find it useful to compare each term along two important dimensions; the *accuracy* of the information and the *intention* of the source to either inform or deceive (see Table 1.1).

In principle, researchers, educators, and policy makers aim to inform or be informed. Nevertheless, at times, well-intended sources may share information that is inaccurate or incomplete. At other times the desire to influence decisions to adopt certain curricula, assessments, books, instruction, or interventions may result in manipulation, fabrication, and deception. In this volume, several contributions present examples of concepts, ideas, teaching methods, and interventions that despite being "false," they continue to influence education. An equally important question is "Why are we

TABLE 1.1 Misinformation and Disinformation

	Misinformation	Disinformation
Definition	False information that is shared by a source who has the intent to inform, but is unaware that the information is false or inaccurate.	False information that is shared by a source who has the intent to deceive and is aware that the information is false.
Accuracy of Information	Inaccurate	Inaccurate
Intent of Source	To inform	To deceive or obfuscate

susceptible to misinformation?" The contributions in this volume provide in-depth discussions that highlight various sources of susceptibility drawing on social psychology, cognitive science, memory research, motivated reasoning, educational psychology, and communication sciences. Finally, and perhaps the most important question is "What can we do about it?" The contributions in this volume offer various interdisciplinary solutions such as the use of computational linguistics, interventions, audience design, and developing skills such as critical thinking.

OVERVIEW OF THE CONTRIBUTIONS

In Section I, "Susceptibility to Misinformation in Education," the collection of chapters focuses on factors that influence the endorsement and persistence of misinformation in dducation. Sinatra and Jacobson identify "zombie concepts" in education to better understand why, despite persistent efforts, such myths continue to enjoy widespread support. List and Rubenstein propose the "likelihood of adoption model" to help understand our susceptibility to educational inaccuracies. Trevors draws on cognitive, motivational, social psychology, and political science literatures to define *intentional correction resistance;* namely, correction failure that is due to individuals' intentional rejection of attempted corrections. Bridge and Maric discuss how confirmation bias manifests in forensic science education as a product of the "CSI effect." Rapp, Imundo, and Adler bring to the forefront *conspiratorial ideation* and *political ideology* as individual difference factors that influence susceptibility to misinformation. Robinson and Bligh identify examples of dramatic turnarounds in standardized test scores that turned out to be hoaxes. Finally, Loehr and Butler offer a critical discussion on how the content and characteristics of the misinformation, cognition of the learner, and sociocultural and contextual factors increase susceptibility to misinformation and misconceptions.

In Section II, "Practices in the Service of Reducing Misinformation in Education," the collection of chapters focuses on practices aimed at reducing the impact of misinformation in education. Allen, Likens, and McNamara discuss the promise of using dynamical systems and *computational linguistics* to model (and possibly combat) the spread of misinformation. Greene, Cartiff, Duke, and Deekens discuss interventions to mitigate misinformation challenges, drawing on research on *self-regulated learning*, multiple source use, and social-psychological research in education. Kim, Butterfuss, Aubele, and Kendeou use KReC to integrate how text, task, and reader factors can combat misconceptions via *audience design.* Paynter, Ecker, Trembath, Sulek, and Keen discuss the need for multilevel support to maintain sustained change in terms of reducing or eliminating use of

ineffective or fad practices in the area of *autism spectrum disorder*. Kowalski and Taylor describe how they apply evidence from research on misconceptions in *psychology* classrooms and finding practices that work. Wikforss offers an evaluation of *critical thinking* in the post-truth era and challenges educational systems that encourage skepticism about truth and objectivity in science. Finally, McCrudden offers a critical discussion of the chapters in this section and identifies common *themes* that emerged in the context of corrective efforts in education.

CONCLUDING REMARKS

Taken together, we believe that the ideas put forth in this collection of chapters advance our understanding with respect to the current challenges that misinformation and disinformation pose in various education contexts as well as approaches to correction that draw on several literatures. Indeed, researchers have advocated for a multidisciplinary effort to combat the issue of misinformation and disinformation that focuses on both the information ecosystem and individuals as "consumers" of information (Lazer et al., 2018). With respect to the ecosystem, we need to do more to prevent the propagation of misinformation. To do this, we must make systemic changes to our information systems—new safeguards are needed (e.g., filtering algorithms)—that align with current technological advances. Further, as "consumers" of information, we need to develop skills that allow us to effectively separate fact from fiction and, ultimately, support an education system that will train students on critical evaluation skills from a young age.

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