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Skills for Today:
What We Know about Teaching and Assessing Communication

Illustration by Kanae Sato

P21 PARTNERSHIP FOR 21ST CENTURY LEARNING

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About Pearson

Pearson is the world's leading learning company. Our education business combines 150 years of experience in publishing with the latest learning technology and online support. We serve learners of all ages around the globe, employing 45,000 people in more than seventy countries, helping people to learn whatever, whenever and however they choose. Whether it's designing qualifications in the UK, supporting colleges in the United States, training school leaders in the Middle East or helping students in China learn English, we aim to help people make progress in their lives through learning.

About P21

P21 recognizes that all learners need educational experiences in school and beyond, from cradle to career, to build knowledge and skills for success in a globally and digitally interconnected world. Representing over 5 million members of the global workforce, P21 is a catalyst organization uniting business, government and education leaders from the United States and abroad to advance evidence-based education policy and practice and to make innovative teaching and learning a reality for all.

Introduction to the Series

This paper is the third in a series to be jointly released by Pearson and P21 entitled, "Skills for Today." Each paper summarizes what is currently known about teaching and assessing one of the Four Cs: collaboration, critical thinking, creativity, and communication. Our partnership on this series signifies a commitment to helping educators, policy-makers, and employers understand how best to support students in developing the skills needed to succeed in college, career, and life.

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Foreword

Communication is commonly thought of as comprising the basic domains of reading, writing, speaking, and listening. While certainly useful, this simple delineation can obscure just how multifaceted and complex communication is in the real world. Communication can occur in many contexts, take many unique forms, and serve many different goals. The communication skills Dave developed during his career as a journalist, writing on deadline for a purpose and specific audience, served him when he was a teacher and then later as chief executive of an influential nonprofit. As a member of the debate team in high school and college, Leah developed her skills for public speaking, listening, and asking critical questions which she has leveraged in every job outside of college, including her current role as managing director and public representative for Pearson.

Academic and career success (not to mention personal happiness) demand a set of skills that support communication across a wide variety of domains, especially in this age of ubiquitous digital contact. As detailed in this paper, these skills go beyond basic linguistic proficiency to include, for example, identifying desired outcomes of communicative acts and gauging others' knowledge and beliefs. Ultimately, the "effectiveness" of any communication is determined by whether it helps achieve desired outcomes, and employers seek out employees who possess the communication skills necessary to accomplish work-related goals. At the same time, a number of research studies suggest a need to better teach students the skills necessary for effective communication.

Research also reveals a number of productive techniques for teaching and assessing communication skills. This paper highlights a number of these techniques, including role play, peer feedback, and metacognitive training, to name a few. In doing so, this paper aims to provide educators, employers, and policy-makers with a shared set of evidence-based recommendations for helping students develop the skills central to effective communication. It is our hope that educators will continue to improve communication-skills training and that policy-makers and employers will support this effort.

In pursuit of the goal of preparing students for success in school, work, and life, Pearson and P21 are delighted to contribute this review of communication-skills teaching and assessment, one in a series of papers on teaching and assessing the 4 Cs: critical thinking, creativity, collaboration, and communication.

Leah Jewell, Managing Director, Career Development and Employability, Pearson, and David Ross, CEO, P21

Image by Patrice Jones

Introduction

Numerous skills can help individuals achieve happy and successful lives, but which are the most important? The Pew Research Center recently attempted to answer that question. A 2014 survey presented a representative sample of US adults with ten skills typically taught in school and asked them which are most important to get ahead in life. Commonly emphasized skills of science and math were selected by 58 percent and 79 percent of respondents respectively. Communication skills, however, were selected by a full 90 percent, making communication skills the most common response (Goo, 2015). Many skills, from mathematical reasoning to artistic creativity, benefit both the individuals who possess them and society as a whole. Yet the Pew survey results highlight the utmost importance of communication skills. Communication skills consequently deserve great emphasis in education. This paper aims to provide a view of the current state of the teaching and assessment of communication skills in the hope of furthering this goal.

Communication as a domain is broad and encompasses numerous subdomains, including reading, writing, interpersonal communication, and public speaking, among others. The concept of communication itself evades a clear, concise definition that encompasses all subdomains, but a variety of academic definitions collectively highlight features of communication such as information exchange, use of linguistic and nonlinguistic symbols, mutual understanding, social interaction, and intentionality (Dance, 1970). Putting these pieces together, we view communication here as a social process in which information is exchanged in order to establish shared meaning and to achieve desired outcomes. Communication takes many real-world forms, like chatting with friends or colleagues, reading the newspaper, giving a presentation, or writing an email. It can be verbal or nonverbal, analog or digital, casual or formal. It can achieve different outcomes: informing, persuading, questioning, or entertaining, to name a few. Ultimately, communication is a complex domain consisting of numerous interrelated subdomains that each take on a variety of unique forms. To lead a happy and successful life, one must master the skills that support effective communication in the forms of communication they encounter most commonly.

Research generally supports the importance of communication skills. On a personal level, communication skills are positively associated with satisfaction in romantic relationships (Eğeci & Gençöz, 2006; Litzinger & Gordon, 2005; Meeks, Hendrick, & Hendrick, 1998) and with families' abilities to achieve healthy levels of cohesion and stability (Olson, 2000). Communication skills are also associated with greater peer acceptance among preschoolers (Hazen & Black, 1989) and use of friendship-formation strategies among college freshmen (McEwan & Guerrero, 2010), indicating a potential role for communication skills in building friendships. Communication skills could even be good for your health. Good communication between patients and physicians has been linked to increased patient satisfaction (Chang et al., 2006; Shaw, Zaia, Pransky, Winters, & Patterson, 2005; Thompson, Collins, & Hearn, 1990) and, perhaps most importantly, improved health outcomes (Stewart, 1995). While all of this research is correlational in nature, it is consistent with the conclusion that communication skills can promote a happy and healthy personal life.

Communication skills have also been linked to academic success. Oral reading skill in First Grade is predictive of growth in reading and math skills from Third through Eighth Grade (Herbers et al., 2012). Similarly, reading skill in Third Grade is predictive of the probability of graduating from high school (Hernandez, 2011). Encouragingly, data in both cases suggest that greater reading skill might mitigate some of the negative effects of childhood poverty on academic achievement. In higher education, communication skill assessed at the outset of college is linked with higher grades and graduation rates (Hawken, Duran, & Kelly, 1991; Rubin, Graham, & Mignerey, 1990). Students' emotions with respect to communication are linked to academic success as well. Specifically, communication anxiety is associated with decreased communication with instructors outside of class (Martin & Myers, 2006), lower grade-point averages (McCroskey, Booth-Butterfield, & Payne, 1989) and increased dropout rates (Ericson & Gardner, 1992; McCroskey et al., 1989; Rubin et al., 1990). Research

therefore establishes a link between communication skills and success in school from elementary school through college.

Strong communication skills are associated with success in professional settings as well. Business partnerships (Mohr & Spekman, 1994) and business–customer relations (Sharma & Patterson, 1999) are strengthened by effective communication, and, in the global working world, intercultural business teams perform better when members possess strong intercultural communication skills (Congden, Matveev, & Desplaces, 2009; Matveev & Nelson, 2004). Communication skills are important for securing a job and career advancement, with strong majorities of surveyed business executives indicating that communication skills play an important role in employee hiring and evaluation and in the overall success of their businesses (American Management Association, 2012; National Association of Colleges and Employers, 2016; Paranto & Kelkar, 1999; Robles, 2012). In a national survey conducted in 2012, over 95 percent of surveyed executives said that communication skills are somewhat or most important in helping grow their organizations, and nearly 75 percent said that communication skills would become more important to their organizations by 2017 (American Management Association, 2012). Employers appear to value written and oral communication skills approximately equally (National Association of Colleges and Employers, 2016), focusing on specific skills ranging from basic writing, speaking, and listening skills to delivering effective presentations (Robles, 2012). In short, employers recognize the value of communication skills and actively seek out candidates who can communicate effectively.

The importance of communication skills to personal, academic, and professional success is recognized in elements of current educational standards and practices. In the United States, the Common Core English and Language Arts Standards specify numerous reading, writing, speaking, and listening skills from kindergarten through high school (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). While the Common Core has been contentious, forty-two of the fifty US states currently have adopted these standards (Common Core State Standards Initiative, 2017), reflecting a commitment in US public education to teach a variety of communication skills starting at young age. In higher education, approximately half of surveyed US and Canadian colleges and universities have implemented "writing across the curriculum" or "writing in the disciplines" programs (Thaiss & Porter, 2010). These programs are designed to take writing-intensive instruction beyond traditional composition courses in order to promote writing skills in all disciplines. Beyond undergraduate education, communication instruction plays a particularly central role in medical school, preparing future physicians to both gather and convey

information effectively and in a way that helps patients feel at ease (Berkhof, van Rijssen, Schellart, Anema, & van der Beek, 2011). These examples are not comprehensive, but they do give a general idea of the scope of communication-skill teaching in education at all levels. As detailed later in this paper, efforts to teach and assess communication skills are many, and research attests to the efficacy of numerous practices.

Still, there is evidence that communication-skills training could improve in preparing students for success. It is not uncommon for teachers to bemoan students' reading, writing, and speaking skills (see Palmer, 2016, and Strauss, 2017, for examples). Additionally, the 2011 National Assessment of Educational Progress found that only 3 percent of students in Eighth and Twelfth Grades performed at the highest achievement level of a standardized writing assessment, while just over half of these students performed at the lowest level, indicating only partial mastery of skills necessary for proficient writing at the students' current grade levels (National Center for Education Statistics, 2012). In the workplace, nearly three-quarters of employers report difficulty finding job candidates who possess requisite communication skills (Business Roundtable, 2017). Silicon Valley recruiters have previously noted that new hires were lacking in writing skills, professional email etiquette, and self-expression capability (Stevens, 2005). Furthermore, 64 percent of employers say that new graduates possess average or below-average communication skills, compared to approximately 45 percent who say the same of more experienced workers (American Management Association, 2012).

Highlighting these findings is not intended to disparage or dishearten; rather, these findings serve as a reminder that education in communication skills, as in all areas, can always improve. This paper aims to provide guidance for doing just that. In the rest of this paper, we identify a set of skills that support successful communication in its many forms, discuss strategies for teaching those skills, and describe methods for their assessment.

Communication Models and Skills

Up to now, we have discussed communication skills in general terms. In this section, we establish a specific set of skills that support effective communication. To do so, we first review a number of influential theoretical models of communication in order to establish a number of core principles. We then draw upon these principles to identify a set of skills necessary for effective communication across a wide array of domains.

COMMUNICATION MODELS

Aristotle's The Art of Rhetoric presents an influential model of communication dating back to the fourth century BCE. Focusing specifically on persuasion, Aristotle proposes three modes: ethos, pathos, and logos. Ethos refers to the persuasive power of establishing credibility with the audience, which can be done by, for example, demonstrating wisdom or good intentions. Pathos refers to the emotions of the audience, which can be evoked and manipulated in order to make the audience more receptive to an argument. Logos refers to the logic of an argument, with soundly reasoned arguments more effective in persuasion. Aristotle's theory of persuasion covers far more than these three modes, but these modes highlight several important aspects of communication. First, an act of communication generally has a desired outcome (here, convincing an audience of an argument). Second, communication is affected by the emotions, beliefs, and social orientations of those involved. Third, effective communication depends on the specific content and structure of what is communicated.

Shannon and Weaver (1964) developed a highly influential model of communication primarily focused on the engineering of electronic communication systems. The model recognizes the following components of communication systems (with each accompanied by an example germane to the present discussion):

- **Source**: The sender of a message (a speaker).

- **Message**: The code conveying the information source's intended meaning (a sentence).

- **Transmitter**: The apparatus that translates the message into a signal (the mouth and vocal cords).

- **Signal**: The physical output of the transmitter (sound waves).

- **Channel**: The medium through which the signal travels (air).

- **Receiver**: The apparatus that translates the signal back into a message (the listener's eardrum).

- **Destination**: The interpreter of the message, who must recover the meaning intended by the information source (the listener).

- **Noise**: Undesired alterations to the signal (a loud cough).

These components highlight several general properties of communication systems. First, communication relies equally on source (henceforth, sender) and destination (henceforth, receiver). Additionally, while communication fundamentally involves the transfer of meaning, meaning, message, and signal are distinct. Meaning is translated into message,

Communication in Practice

The Center for Advanced Professional Studies (CAPS) provides high-school juniors and seniors with the training they need to succeed in high-demand, high-skill jobs. CAPS teaches professional skills holistically in the context of projects and interactions with peers, instructors, and business partners. Below are examples of how CAPS students learn and practice communication skills across three academic disciplines.

CAPS MEDICAL SIMULATION LAB

CAPS medicine and healthcare students participate in sessions in the Medical Simulation Lab with a high-fidelity patient simulator. Students become healthcare providers, working in teams and assuming different healthcare professional roles. These simulation exercises allow students to practice interprofessional communication while receiving an introduction to basic clinical skills. As students try on varied healthcare roles from week to week, they interact with a computerized patient and their peers to diagnose and treat a variety of medical issues. The Simulation Lab provides students with the opportunity to develop and enhance communications skills and confidence in their own abilities without worrying about compromising patient safety. Students quickly learn that professionals in healthcare must communicate and collaborate because access to data is growing rapidly and no professional has complete mastery of the knowledge and skills across all areas. The Simulation Lab is a learning springboard for young professionals, providing a foundation for future growth and development.

ENGINEERING

Communication skills are an essential component in the education of engineering students. They are one of eleven key outcomes required by the Accreditation Board for Engineering and Technology (ABET) and received the highest rating from employers in the study. Further supporting this, CAPS business partners have said repeatedly that oral communication and presentation skills are one of the best career enhancers and the single biggest factor in determining a student's career success or failure. As a program that prepares students for post-secondary engineering programs, CAPS focuses on developing the communication

then into signal, back to message, and back to meaning.[1] As Weaver notes, accurately recovering meaning from a message is an incredibly complex problem that relies both on the sender's crafting of the message and the receiver's ability to interpret that message as intended. Weaver additionally notes that even if the intended meaning is accurately conveyed, it is not guaranteed that the communication will lead to the desired outcome. Finally, Shannon and Weaver's model stresses the importance of the channel over which communication takes place. Shannon and Weaver's discussion of channel focuses largely on engineering issues such as information capacity and signal fidelity, but focus on communication channels more generally highlights the importance of the means by which any message is transmitted. For the present purposes, we note that a message can be sent through many types of "channels," such as face-to-face conversations, instant messaging, email, written report, or oral presentation, each with its own properties and conventions regarding its use.

Shannon and Weaver's model ultimately did not incorporate what might be considered the more human elements of communication. These elements are addressed in Berlo's (1960) seminal source–message–channel–receiver (SMCR) model, which extended Shannon and Weaver's model to include human elements that impact the effectiveness of communication. With respect to communicators themselves, Berlo recognized that communication skill, background knowledge, attitudes, and social and cultural backgrounds influence the successful conveying of meaning. With respect to messages, Berlo appreciated that a message's ability to convey meaning relies not only on its content but also on its structure, the manner in which it is conveyed, the particular form it takes (e.g., speech versus text), and the secondary elements that accompany it, such as gestures. With respect to the channel, Berlo's model recognized the importance of the five senses, noting that communication involves transmission of a signal that can engage any number of senses.

One interesting commonality among the models reviewed thus far is that they make a clear distinction between sender and receiver. Indeed, many forms of communication, for example writing a report or listening to a presentation, are one-way, with an individual acting as only sender or receiver. Yet, many other forms are two-way or interpersonal, with individuals acting as both sender and receiver in a dynamic, interactive exchange of messages. These forms of communication are addressed in Newcomb's (1953) model of interpersonal communication, in which communication is viewed as a means by which communicators achieve a state of equilibrium between their feelings and beliefs with respect to some topic of communication and with respect to one another. This model makes no meaningful distinction between sender and receiver and additionally highlights the importance of the social orientation of each communicator toward

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[1] Shannon and Weaver were particularly concerned with recovering the intended message from the signal when that signal is sent across a noisy channel, such as a telecommunication cable under electromagnetic interference. We ignore this issue of signal fidelity here, instead focusing primarily on the the effective conveying of meaning.

base upon which students can build. In keeping with the holistic approach to professional skill development, engineering students have ample opportunities to practice their oral, written, listening, visual, and interdisciplinary communication skills, including final presentations and interviews with industry professionals around project work.

BUSINESS: "SHARK TANK"
"If you cannot communicate well, you are never going to persuade the sharks to get behind your product or service." That is one of the first lessons that the CAPS global-business students learn as they embark on culminating projects. To prepare students for time in the "Shark Tank," students spend time throughout the semester honing elevator pitches and learning to quickly explain the differentiating elements of their products or services. Confidence can be learned, and it begins with establishing eye contact and making a simple and compelling pitch. Students routinely learn from sales and marketing professionals, and, more organically, they lead program tours, conduct meetings with business partners, and network throughout the community.

Blue Valley Center for Advanced Professional Studies, Overland Park, Kansas

the other, a notion generally related to Aristotle's notion of ethos originating over 2,000 years before Newcomb's work.

These models present only a small selection of theoretical approaches to communication, and in briefly summarizing them the complexity of communication is apparent. Still, these models collectively highlight the following principles:

- Communication involves the act of conveying meaning.

- Meaning is conveyed to achieve some outcome (e.g., informing, persuading, questioning).

- Meaning cannot be conveyed directly and must be transmitted via a message that is subject to interpretation by each individual communicator.

- A message's content, structure, and delivery are all critical to a message's success in conveying the intended meaning.

- Messages can be any combination of linguistic and nonlinguistic symbols.

- Messages are sent through channels or mediums, each with unique properties that affect messages' forms and interpretations.

- Senders and receivers of messages play equally important roles in the successful conveying of meaning.

- Communication can be one-way or interpersonal.

- A communicator's production and interpretation of messages are affected in part by emotions, beliefs, knowledge, social and cultural background, social orientation toward other communicators, and communication skills.

The last point is important: Effective communication requires skills that support the successful conveying of meaning and, ultimately, the achieving of desired outcomes. A sender must be able to reliably craft and deliver messages that clearly convey the intended meaning and achieve the desired outcome. A receiver must possess the skills to attend to messages and to assign to those messages the meaning intended by the sender. Communicators must be able to apply these skills in a variety of communicative domains, across a multitude of channels, and among a diverse group of communicators, all the while maintaining a focus on the ultimate goals of the communicative process. The skills necessary for effective communication therefore are numerous and complex.

In the following sections, we draw upon the principles above to identify a set of core communication skills. In order to be an effective communicator, one must possess skills that support both sending and receiving messages across the wide array of communicative domains and contexts encountered in life. We therefore identify a set of broadly applicable, domain-general skills. In keeping with the sender–receiver dichotomy, we first identify the skills central to producing effective messages before moving on to those necessary for effectively receiving messages.

PRODUCTION SKILLS

Identifying Desired Outcomes

An act of communication is effective when it achieves one or more intended outcomes. Effective communication therefore begins with identifying outcomes, which requires the ability to reason about outcomes in a principled way with respect to any specific communicative act. The concepts of illocution and perlocution (Austin, 1962) are particularly useful for this purpose. Illocution refers to the function of an act of communication, for example to convey or request information, to assert something as true, or to promise to do something. (Searle, 1975, presents an influential taxonomy of illocutionary acts.) However, the illocution of a communicative act ultimately is distinct from the effect that the communicative act has on the receiver, which is known as the perlocution. For example, a sender promising to do the receiver a favor (illocution) might cause the receiver to feel a sense of gratitude (perlocution). Aristotle's Rhetoric focused on persuasion, a very common perlocution in educational and professional contexts. An effective sender must target a specific illocution, perlocution, or both when communicating. For example, when delivering a presentation, one must decide if the presentation is intended simply to convey information or to make an argument. Once that is determined, the sender must craft a presentation likely to cause the audience to understand and remember the information (in the former case) or to be persuaded by the argument (in the latter case).

Crafting Clear Messages

In addition to identifying the intended outcome, a sender must craft a message that clearly conveys a meaning that promotes that outcome. In the realm of message clarity, copious recommendations on clear writing have been made (see Gunning, 1952, and Young, 2002, for highly cited examples), and many of these recommendations can be applied to clarity in speech as well. At a minimum, message clarity depends upon employing appropriate vocabulary, grammar, and logical structures, but clarity does not rest solely on these factors. It also depends on pragmatics, or issues related to the broader context in which a message is situated. Grice's (1975) maxims of conversational "cooperation" are perhaps the most influential ideas in pragmatics. The maxims state that a message should

1. provide the exact amount of information required, no more or less;

2. present only relevant information;

3. be concise and avoid ambiguity and obscurity;

4. not present false information.

Adhering to these principles as a sender can enhance the receiver's ability to interpret the message as intended and can foster positive social orientations (especially maxim 4) that support effective communication. Finally, it is important to note that in the domains of written and oral presentation, crafting a clear message typically involves an iterative process of revision that requires self-regulation skills such as goal-setting, planning, and reflection (Barnett, 1989).

Clear messages often make use of nonlinguistic message components. Face-to-face communication usually is accompanied by bodily gestures, which can emphasize what is said verbally, convey beliefs or feelings, regulate the dynamics of interpersonal communication, or even directly substitute for verbal information (Ekman & Friesen, 1969). The role of gesture in verbal communication has been recognized by many scholars (see Gordon, Druckman, Rozelle, and Baxter, 2006, for review). Additional nonlinguistic elements of messages come in the form of visual aids, common in

both spoken and written communication in educational and professional contexts. Expertise in communication through nonlinguistic visual modes is often termed "visual literacy" and has been recognized as an important component of communication in a wide variety of contexts (Dondis, 1974; Fransecky & Debes, 1972; Stokes, 2002).

Modeling Others' Minds

Skills in producing messages are meant to support a sender's ability to accurately convey meaning. However, as noted previously, meaning is conveyed via messages that are subject to interpretation by the receiver. A sender must possess skills required to model the mind of the receiver in order to produce a message that the receiver is likely to interpret as intended. For example, senders should avoid using terms that are unknown to the receiver or making claims that might offend the receiver (unless such offense is a desired outcome). In psychology, the ability to model others' mental states is known as "theory of mind" and is a skill typically developed in early childhood (Bretherton, McNew, & Beeghly-Smith, 1981; Goldman, 2012). In communication, the notion of "audience analysis" captures the process by which a speaker or writer assesses receivers' traits such as knowledge, beliefs, and culture in order to craft the most appropriate message (McQuail, 1997). While audience analysis has been applied most commonly to mass communications, at its core it is applicable to all forms of communication.

Adhering to Conventions

A sender also must account for diversity in the conventions of different disciplines, professions, and communication channels. For example, the conventions governing the exchanging of text messages with friends allow for the usage of conventionalized slang and abbreviations ("textese"), a convention that sometimes is misapplied in other communicative contexts (e.g., Drouin, 2011). In academic writing, professional associations issue their own style manuals that provide extensive guidance on the norms of discourse in their disciplines (Hagge, 1997). Other norms might be implicit, though, such as the tendency for scientific writing to hedge claims in anticipation of opposing views (Hyland, 1996). Like science and academics, the business world has its own conventions (Ewald & Stine, 1983; Kramer & Hess, 2002), and individual organizations can vary their communication conventions over time in response to those norms' perceived effectiveness in achieving business goals (Suchan, 2006). Recognizing and adhering to conventions is central to producing messages that are interpreted as intended.

Accounting for Social and Cultural Differences

In an increasingly global world, communicators often come from socially and culturally diverse backgrounds, presenting additional challenges in producing a message that will be interpreted as intended. In general, cultures can differ in relatively low-level aspects of communication, such as pacing and pausing of speech, or in high-level aspects, such as their use of indirect language, potentially leading to problems in communication across cultures (Tannen, 1984). To cite one example, Chinese, Korean, and American cultures differ in their reliance on unstated context in communication and in their tolerance for confrontation (Kim, Pan, & Park, 1998). Recognizing and accounting for these cultural differences necessitate what is commonly referred to as intercultural communicative competence, or "the knowledge, motivation, and skills to interact effectively and appropriately with members of different cultures" (Wiseman, 2002, p. 208). Numerous models of general intercultural competence have been proposed, highlighting skills such as maintaining awareness of one's own cultural norms, knowledge of and curiosity about other cultures, recognizing cultural differences, and dealing with cultural uncertainty (Matveev, 2017). These intercultural skills are required for a sender to

craft a message that will be interpreted as intended by a member of another culture and more generally to develop positive social relationships that support communication.

Selecting Appropriate Channels

Finally, a sender must be able to select the appropriate channel for communication. This is particularly important in the modern world, where communication channels proliferate: email, video chat, instant messaging, blogs, wikis, websites, and social media, in addition to more traditional forms of communication such as papers, presentations, or face-to-face conversation. Each of these channels has advantages and disadvantages that must be reckoned with. For example, initiating an instant message can result in an immediate response but interrupts the receiver's current activity, while emails often involve delayed response but do not necessarily interrupt current activities (Turner, Qvarfordt, Biehl, Golovchinsky, & Back, 2010). In general, the modern world involves a complex web of communication channels with different properties and usefulness in different contexts (Turner et al., 2010; Watson-Manheim & Bélanger, 2007). A sender must be able to navigate this complexity, choosing the most effective channel for each act of communication.

To sum up, the goal of a sender is to produce a message likely to be interpreted by the receiver as intended so that the desired outcome might be achieved. To do so, senders must be able to identify desired outcomes, produce messages that most clearly convey meaning that might achieve those outcomes, model receivers' minds, adhere to conventions, account for social and cultural diversity, and select the most appropriate channel for communication. These skills apply broadly across many communicative contexts and domains. As we will discuss next, some of these production skills are central to effectively receiving messages, as well, though message reception also has skills that apply to it uniquely.

RECEPTION SKILLS

Receiving messages draws upon many of the skills required for effective message production. Like production, reception requires basic linguistic and visual competencies for encoding and decoding linguistic and nonlinguistic symbols. Receivers additionally must be able to model the minds of senders to reliably recover intended meanings, and, because senders and receivers can differ in social and cultural backgrounds, reception requires adequate skill in intercultural communication. Receivers must be aware of the conventions governing communication in various contexts and channels in order to accurately interpret the message in context of those conventions. Finally, receivers must also determine their own desired outcomes; for example, a reader of a complex text might first determine what specific information they are looking for.

Receiving messages also requires skills not involved in message production: specifically, those involved in listening and reading. While the basic decoding of linguistic and nonlinguistic signals can be viewed as a largely passive act, receiving a message also requires active effort on the part of the listener or reader in order to fully appreciate a sender's intended meaning and communicative goals. Various strategies for taking an active role in reading and listening have been proposed, going by terms such as "active listening" (e.g., Hoppe, 2007) and "deep" (e.g., Wolf & Barzillai, 2009) or "close reading" (e.g., Brummett, 2010). What these receptive techniques have in common is that receivers are encouraged to actively attend to the messages, monitor their own understanding, and consider the background, emotions, and intentions of the sender.

Active Listening

Active listening is most commonly applied to interpersonal communication and was developed initially for application in psychological counseling, though

it has been applied in many contexts. Hoppe (2007) proposes six specific skills with respect to active listening in face-to-face communication:

1. paying attention;

2. withholding judgment;

3. reflecting;

4. clarifying;

5. summarizing;

6. sharing.

In paying attention, the listener not only carefully attends to the speaker but also overtly demonstrates this attention with behaviors such as eye contact and bodily posture. Withholding judgment helps the listener avoid interference in interpretation from their own preconceived beliefs, biases, or social or cultural norms. Reflecting involves briefly paraphrasing the speaker's message, thereby providing an opportunity to uncover possible misunderstanding. Clarifying involves requesting further information to encourage the speaker to provide all necessary information for the listener to recover the intended meaning and to uncover the speaker's communicative goal. Summarizing the speaker's message occurs at the end of the listening process, providing a final opportunity to identify any misunderstandings or points of ambiguity. Finally, sharing involves informing the speaker about one's own ideas and feelings with respect to what the speaker has conveyed. All the while, it is important for the listener not to interrupt the speaker. These active-listening skills support accurately and objectively recovering intended meaning in the context of interpersonal communication. Note that withholding judgment can also support one-way communication, for example, when reading a politician's statement in support of a controversial government program.

Deep Reading

Like active listening, "deep" or "close" reading requires active effort on the part of the receiver. However, while active listening focuses mainly on developing understanding without judgment, deep reading focuses more on critical analysis. Davis (1944) identifies nine fundamental reading skills. These include basic skills such as knowing word meanings and answering questions using information stated in a text, as well as more complex skills such as drawing inferences about unstated information and determining a writer's intent. These more complex skills begin to get at the notion of "deep" or "close" reading mentioned above. Wolf and Barzillai (2009, p. 32) define deep reading as "the array of sophisticated processes that propel comprehension and that include inferential and deductive reasoning, analogical skills, critical analysis, reflection, and insight." Ultimately, these skills are applicable to a broad range of communicative contexts beyond reading books and papers, as effectively receiving any message can require some degree of critical analysis and reflection. In reality, deep-reading skills overlap to a significant degree with more general critical-thinking skills. (See Ventura, Lai, & DiCerbo, 2017.)

In this and the preceding section, we have identified eight core communication skills related to effective production and reception of messages across a wide array of communicative domains. Table 1 summarizes these skills and provides for each a few examples of behaviors exhibiting the application of the skills.

SKILL	DESCRIPTION	EXAMPLE BEHAVIORS
Identify desired outcomes	Determine one or more desired results or consequences of the communication	Identify an author's main argument Determine the information needed to adequately respond to a question Recognize information that is extraneous to the main point of a discussion
Craft clear messages	Create messages that accurately convey intended meaning, appropriately utilizing nonlinguistic cues (body language, visual aids)	Form grammatically correct sentences Effectively use hand gestures for emphasis Avoid digressions Explain a concept by using a diagram
Model others' minds	Recognize and account for others' knowledge, beliefs, dispositions, and emotions	Determine an audience's level of knowledge or expertise in a topic Explain how personal background might affect interpretation of message Anticipate emotional reaction or receptiveness to a statement or argument
Adhere to conventions	Follow the rules or norms of specific disciplines or contexts	Use rhetorical strategies common to discipline Use terminology consistent with usage in domain Cite sources appropriately Write or speak at the appropriate level of formality
Account for social and cultural differences	Identify and account for variability in social and cultural norms	Recognize cultural differences in communicative norms Avoid culturally specific slang or idioms Seek out information on an unfamiliar culture before initiating cross-cultural communication
Select appropriate channels	Utilize the most appropriate communicative channel	Describe the advantages and disadvantages of using email or instant messaging to hold a conversation Determine whether a face-to-face conversation will be more effective than a remote conversation
Active listening	Actively attend to a sender's message, withhold judgment, monitor and clarify understanding	Maintain eye contact while listening Request clarification as needed Avoid making unwarranted assumptions Accurately paraphrase a sender's message
Deep reading	Critically analyze text or speech, monitor comprehension, draw inferences, question, and reflect	Identify important information in a text or presentation Critically analyze an argument Draw inferences about unstated information Recognize own confusion

Table 1   Communication skills with example behaviors.

Teaching Communication Skills

Having identified core communication skills, we now turn to the question of how to help learners acquire and refine these skills. Our review focuses on empirical research on effective teaching practices so as to provide evidence-based recommendations for certain practices. As we shall see, research on communication-skills teaching generally does not focus on teaching the individual skills above in domain-general fashion. Instead, research typically investigates teaching communication skills holistically within particular communicative domains such as reading, public speaking, or interpersonal communication. This is only natural, given that students must be prepared to communicate effectively in the specific domains that they will encounter in future academic and career contexts. The following research review on teaching practices (and that on assessment later in the paper) is structured accordingly.

TEACHING PRODUCTION SKILLS

Producing effective messages is a complex skill, and researchers have explored a number of approaches to developing production skills in a variety of contexts. In particular, the research literature has targeted oral presentation, interpersonal communication, and written presentation, each of which will now be discussed in turn.

Public Speaking

One aspect of communication that many students struggle with is oral presentation, or public speaking. A common reason for this is that many people feel nervous when they need to speak in front of an audience, and instructional approaches have been developed that attempt to help learners overcome this apprehension. Many approaches target severe public-speaking anxiety, but they can help less severe cases as well. A meta-analysis by Allen, Hunter, and Donohue (1989) found that the most effective approaches combine a number of elements:

- relaxation techniques to mitigate physiological arousal;

- cognitive reappraisal to reframe the experience;

- public-speaking skill training to help boost confidence.

How to best teach presentation skills themselves has been explored as well. A recent review of the literature by van Ginkel and colleagues (van Ginkel, Gulikers, Biemans, & Mulder, 2015) led to the formulation of seven design principles for developing oral presentation skill. Briefly stated, they are:

- Establish clear learning objectives.

- Make presentations relevant to authentic activities in the discipline.

- Present expert and peer models of successful performance.

- Offer practice opportunities.

- Provide explicit and timely feedback.

- ■ Have peers provide formative feedback.

- ■ Help students to self-assess, potentially by using video recordings.

The use of video-recorded practice can help facilitate many of these design principles (see Rider & Keefer, 2006). When students record themselves speaking on a clearly defined topic, watching the video can facilitate self-reflection about their performance, pinpointing areas to improve, building confidence, and practicing how to manage their own nervousness (Murphy & Barry, 2016), particularly when they are provided rubrics to help self-assess (Ritchie, 2016). In addition, combining recordings with constructive feedback from peers or instructors has been found to improve presentation skill (e.g., van Ginkel et al., 2017). Peer feedback appears to be particularly beneficial, as feedback from peers may be easier for a student to comprehend and to integrate into subsequent performance (Herrero, Iborra, & Nogueiras, 2016). In addition, the process of providing feedback allows learners to reflect on aspects that are critical to successful performance by comparing and contrasting successful and unsuccessful attempts and isolating the most critical elements. (See peer review in 'Writing', below, for more details.) From a logistical standpoint, peer feedback can likely be provided more readily than feedback from an instructor, meaning that peer feedback can provide for more opportunities to practice presenting as well as more opportunities to receive feedback.

Interpersonal Communication

Interpersonal communication skills are becoming increasingly important in the workplace, with the increasingly collaborative nature of work (Casner-Lotto & Barrington, 2006). Even professional domains that primarily involve individual work still require some degree of successful collaborative dialogue. The training of interpersonal skills has been examined in the context of a number of disciplines, and research has established role play to be a particularly effective approach. At its core, role play requires learners to act out a situation similar to one they might encounter in the real world. For example, a novice dental student may be asked to role-play an interaction with a patient (Hannah, Millichamp, & Ayers, 2004), or a salesperson may be asked to role-play a meeting with a potential customer (Carroll, 2006).

The evidence supporting role play as an instructional technique has been documented in medicine (Aspergen, 1999), customer service (Rautalinko & Lisper, 2004), and social work (Rogers & Welch, 2009). Specific aspects of these programs have been found to increase their impact. For example, when students receive feedback, their subsequent performance improves, whether this feedback comes from instructors (see Berkhof et al., 2011), or from peers (e.g., Hulsman & van der Vloodt, 2015). In addition to feedback from others, students benefit from watching video recordings of their own performance. When provided with a clear rubric for self-assessment, video recordings allow learners to provide themselves with constructive feedback (e.g., Perera, Mohamadou, & Kaur, 2010).

Writing

Writing instruction has, over time, shifted from focusing on the product of writing to the process of writing (for example, see Barnett, 1989). Prevalent approaches place a particular emphasis on brainstorming, drafting, and experimenting with ideas, forms, and strategies, and cycles of revision to improve the effectiveness of the writing. This shift places a greater focus on helping learners "master the higher-level cognitive processes involved in composing, develop . . . self-regulated use of effective writing strategies, and form positive attitudes about

writing and about themselves as writers" (Graham & Harris, 1993, p. 170). A meta-analysis of studies on writing instruction for adolescents supports the efficacy of the writing strategy and self-regulated writing approach; the average effect size for these treatments is over .8, compared to simple grammar instruction, which actually has a negative average effect size (Graham & Perin, 2007)![2]

While individual studies examine different writing strategies, there are general themes that are prevalent (see de Smedt & van Keer, 2014). As a representative example, we can consider the intervention described by De La Paz and Graham (2002), which trained learners on a suite of effective writing strategies, combining specific suggestions for writing with guidance on the writing process and self-regulatory strategies (see Table 2). Students who received training on these strategies wrote essays that were rated to be of significantly higher quality, and this effect persisted after a one-month delay.

STRATEGY	DESCRIPTION
Pay attention to the prompt	Identify what is being asked about and think about how a piece of writing could address it
List main ideas	Brainstorm some main ideas and select some to focus on
Add supporting ideas	Develop details and elaborations that support the main ideas
Number your ideas	Consider the order of how you will cover the main topics
Work from your plan	Make sure that your writing includes the main ideas and relates to them to the thesis
Remember your goals	Think about your personal goals for the task and reflect on how you are progressing
Include transition words	Use transition words, particularly between paragraphs, to guide the reader
Try to use different kinds of sentences	Vary sentence structure to engage the reader
Exciting, interesting words	Word choice can help make the text more interesting to read

Table 2   The PLAN-WRITE strategy, adapted from De La Paz and Graham (2002).

In general, effective approaches include strategy instruction like this, as well as training on how to summarize texts, opportunities to work collaboratively on writing, and support for effective goal-setting (see Graham & Perin, 2007). In addition, peer review of writing has also been found to be an activity that improves writing skill for both the reviewer and the one who receives peer feedback (Patchan, 2011). While many instructors, parents, and even students may believe that receiving feedback from experts (e.g., course instructors) is superior to receiving feedback from nonexperts (e.g., peers), empirical studies have shown that nonexperts perceive peer feedback to be just as useful (Cho, Chung, King, & Schunn, 2008). The advantage for peer review is particularly strong when students are able to receive feedback from multiple peers. This helps mitigate the potential risk that a student might receive comments only from low-skill peers who do not provide constructive feedback while also allowing a student to see if any comments appear more than once, indicating an issue that may be particularly important to address in future revisions. There is also a strong benefit for providing feedback, as the skills practiced when reviewing (i.e. detecting and diagnosing issues, generating potential solutions) are similar to those used in the writing process (Lu & Law, 2012; Patchan & Schunn, 2015).

[2] An effect size of 0.8 here generally denotes a large beneficial effect, while a negative effect size suggests that an intervention has a detrimental effect.

In addition to essays of the kind students write in school, communications occur in many other written formats. In particular, the modern world runs on emails, text messages, and instant-messaging apps. Given this centrality, it is curious that there is a dearth of empirical research examining approaches to improve these communication skills. While a number of studies have explored the opinions of students, faculty, and administrators (e.g., Davis, Deil-Amen, Rios-Aguilar, & González Canché, 2015; Roblyer, McDaniel, Webb, Herman, & Witty, 2010) regarding the use of social media, discussion boards, and other types of computer-mediated writing, actual training regarding how to best make use of technology-mediated communications has yet to be examined in the research literature. This is an important area for future work to explore.

TEACHING RECEPTION SKILLS

Active Listening

Effective interpersonal communication requires the ability to comprehend conversational partners in a way that allows for a richer dialogue to emerge. For this to happen, both participants must actively participate, and the research literature emphasizes that effective listening is an active process. In general, approaches to teaching listening strategies focus on paying close attention to the speaker and blocking out distractions, developing questions, connecting what one is hearing to their own knowledge, generating predictions, and summarizing (e.g., Brent & Anderson, 1993). Active listening was developed for use in a therapeutic context but has been applied to many other professional and personal domains. Active-listening techniques include paraphrasing, verbalizing emotions, summarizing, clarifying, encouraging/prompting, and asking questions, which can facilitate many kinds of interpersonal conversations. For example, Kubota, Mishima, and Nagata (2004) showed how a one-day training oriented around role play and discussion of active-listening strategies improved middle managers' skills. Similarly, active listening has been taught to undergraduate computer-science students as a way to support important "soft skills" necessary for their future careers, in both face-to-face and digital communications (such as over instant-messaging software; see Bauer & Figl, 2008). As has been observed in training to become a more effective interpersonal speaker, role play with subsequent feedback, reflection, and discussion can be a powerful approach for improving listening skills as well.

Reading Comprehension

Research on reading comprehension has a heavy focus, as might be expected, on supporting early childhood reading (see National Institute of Child Health and Human Development, 2000), but has also been explored in higher education (see Relles & Tierney, 2013). In addition, research has examined both foundational elements (e.g., Fuchs & Fuchs, 2005; Kuhn, 2004) as well as higher-order strategies (particularly for those with difficulties; see Scammacca, Roberts, Vaughn, & Stuebing, 2015).

One approach that has a great deal of empirical support is Self-Explanation Reading Training (SERT; McNamara, 2004). This approach combines research-supported training on reading strategies with techniques that encourage self-explanation (e.g., Chi, Bassok, Lewis, Reimann, & Glaser, 1989), which is the process of explaining to oneself the meaning of what one is reading. The six particular strategies covered in SERT are described in Table 3 and have been implemented both as teacher-delivered instruction and through a learning technology (Magliano et al., 2005; O'Reilly, Sinclair, & McNamara, 2004). The impact of strategy training is particularly strong

for low-knowledge learners; when one is already well versed in a domain, there may be less difficulty in comprehending the text to begin with (McNamara, 2004).

STRATEGY	DESCRIPTION
Comprehension monitoring	Checking one's understanding to ensure that the text has been grasped
Paraphrasing	Restating the text into one's own words
Elaboration	Creating inferences that link the text to related knowledge
Using logic	Connecting text to common sense or everyday knowledge
Prediction	Generate predictions of what might come next in the text
Bridging inference	Linking individual sentences together and describing their relation

Table 3   Strategies and descriptions that are used in Self-Explanation Reading Training (SERT), adapted from McNamara (2004).

Beyond simply paraphrasing, some researchers have explored how writing summaries improves reading comprehension (Caccamise, Franzke, Eckhoff, Kinstch & Kintsch, 2007). In addition, as with other communication skills, working collaboratively can provide a beneficial learning opportunity. For example, King (2007) summarizes research on a program that helps peers ask deep questions while discussing a text and finds that this practice can spark productive engagement that leads to better comprehension.

TEACHING INTERCULTURAL COMMUNICATION SKILLS

It is increasingly important to be able to converse with individuals from different social and cultural backgrounds. Half of all businesses recently surveyed reported using virtual teams made up of individuals from different cultures (RW3, 2016). In addition to the listening and speaking skills described above, then, it is important to develop skills necessary to recognize and account for cultural differences in communication. Approaches to develop these skills, like many others, include both direct instruction on important background knowledge (i.e. that different cultures vary in meaningful ways from one's own) and practice with particular strategies that can help improve intercultural communication. One approach is to start out by focusing on one's own cultural characteristics (DeVoss, Jasken, & Hayden, 2002) to understand how one might appear to others as well as to lessen the potential of viewing cultural differences as "a problem to solve." More specific suggestions for interacting with intercultural communicators include being flexible, nonjudgmental, respectful, empathetic, and being able to take conversational turns.

Researchers have used a number of pedagogical strategies to facilitate the development of intercultural communication skills. One review found that the most common approach was group discussion (Matveeva, 2008). From a language-learning perspective, Usó-Juan & Martínez-Flor (2008) describe a set of instructional activities to explore a new culture while learning its language by asking students to collect cultural artifacts (e.g., movies, documentaries, news reports, books, articles) and using those to construct authentic reading and listening activities, with a focus on developing broader competence in communicating in a foreign language. There are also a number of programs and associated frameworks for developing a broad range of intercultural skills in more immersive situations such as travel and longer workshops which often include a language learning component (see Matveev, 2017).

TEACHING COMMUNICATION SKILLS

Another common instructional approach is problem-based learning, where teams of learners tackle real-world relevant problems. As intercultural communication is important in the globalized world of business, this approach has been particularly important to educators in business programs (e.g., Saatci, 2008). A significant component of this kind of training is a focus on preparing students to effectively use technology to mediate these communications. Educational experiences that allow for first-hand involvement in a virtual global team are seen as valuable preparation for students (Karpova, Jacobs, Lee, & Andrew, 2011). In addition, simulation-based educational games have been explored as one way to develop the ability to navigate intercultural communications in authentic and varied situations (Hays et al., 2009).

Image by Juan Jose Pantino Vallejo

Assessing Communication Skills

Assessment of communication skills is a central component of communication-skill training. It appears that instructors commonly use locally developed assessment techniques. A survey of instructors of communication courses at US colleges and universities revealed that 69 percent used instructor-developed assessments (Morreale, Hugenberg, & Worley, 2006). The remainder primarily used either school-wide measures or no assessments at all. Such locally developed assessments can be better tied to learning objectives and subject matter than can published assessments of general communication, providing both a closer match to the specific aspects of communication instructors want to target and a better measure of communication skills as they are practiced in a given discipline.

In thinking about creating classroom assessments, it is helpful to use a process that ensures assessments measure the skills the authors intend. Evidence-centered design provides such a systematic framework (Mislevy, Steinberg, & Almond, 2003). The evidence-centered design (ECD) framework consists of three components:

- **Student model**: Define the claims to be made about learners' competencies.

- **Evidence model**: Establish what constitutes valid evidence of the claim.

- **Task model**: Determine the nature and form of tasks that will elicit that evidence.

Therefore, a good task for assessing communication elicits behaviors that provide evidence about key communication skills, and it must also provide principled interpretations of that evidence in terms that suit the purpose of the assessment. In the sections that follow, we describe and provide examples of task-model types and evidence-model types (how the tasks are scored) commonly used to assess communication.

ASSESSING PRODUCTION SKILLS

Public Speaking

Assessment of speaking skills is most often done via observation of actual speaking tasks. In the K-12 world in the United States, the major standardized assessments produced for the Common Core-aligned state assessment consortia do not assess speaking skills despite the fact that there are Common Core standards for them. The Partnership for Assessment of Readiness for College and Careers has instead released rubrics for the assessment of speaking standards. Nearly all assessments of speaking skills are performance-based assessments in which students are provided (or select) a topic or scenario and produce anywhere from a few words to a full public speech. This can be done live or captured via video.

Like many performance-based assessments, scoring can be accomplished via rubrics. Two notable rubrics are the Oral Communication VALUE Rubric published by the American Association of Colleges and Universities and the Competent Speaker Speech Evaluation Form published by the National Communication Association. The Competent Speaker Speech Evaluation Form contains eight criteria from "Chooses and narrows a topic appropriately for the audience and occasion" to "Uses language

Communication in Practice

Kay Halasek has taught a wide variety of undergraduate and graduate writing courses during a teaching career spanning over three decades and several universities. She also teaches and writes about composition pedagogy and is the author of the award-winning book *A Pedagogy of Possibility*.

In her teaching, Halasek emphasizes that effective writing begins with self-reflection and consideration of audience, purpose, and context. In one exercise, she presents students with a list of statistics from a cover of The Atlantic magazine and asks them to group the statistics however they see fit. Even though the statistics exist outside of the context of any particular claim or argument, students' groupings highlight how they naturally apply subjective interpretations to what ultimately are isolated facts. Halasek further builds students' awareness of their own perspectives and biases by frequently asking them to examine how their life experiences have shaped their beliefs and to identify prejudices and assumptions they must grapple with before engaging with a particular topic. When students come to different conclusions regarding a piece of writing during class discussion, Halasek guides students in exploring how different individuals can interpret the same text in sometimes radically different ways. These lessons ultimately teach students how to examine the relationships between their own perspectives and those held by members of a socially and culturally diverse audience, a reflective process at the heart of effective writing.

Halasek ensures that students receive continual feedback throughout the writing process, from initial ideation to final draft. Much of this feedback is provided by peers. In one activity, students "pitch" their idea for a paper to several of their peers in a classroom activity resembling speed dating. Students reflect on their peers' feedback to determine which explanation of their idea was the most successful and why. Bringing peer feedback into the writing process at this early stage has beneficial effects when students later provide feedback on each other's drafts; students' involvement in each other's initial ideations fosters a sense of mutual investment that encourages them to provide thoughtful (as opposed to surface-level) feedback to one another during the process of writing and revising drafts.

Ultimately, Halasek recognizes that students must learn to write effectively in their own disciplines in order to be successful in their careers. In a second-year composition course, students from a range of majors bring in pieces of academic writing from

appropriate to the audience and occasion." Each criterion can be rated unsatisfactory, satisfactory, or excellent. However, the authors also provide a more holistic rating option. The scale has shown adequate interrater reliability and correlation with other measures of public speaking as well as similar scores for individuals of different races and genders (Morreale, Moore, Surges-Tatum, & Webster, 2007).

While ratings have always been done by person, there are also efforts to find methods of automated scoring. A number of assessments of English language learning use automated scoring to assess small samples of speech (e.g., Pearson's Test of English Language Learning, 2015). The most ambitious effort in automated scoring of speech may be one undertaken by the Educational Testing Service. They have attempted to create an evaluation combining evidence from body language captured by Kinect, speech delivery, and speech content (Chen et al., 2014). Perhaps not surprisingly for an initial attempt, correlations with holistic human ratings were only moderate, suggesting that more work is needed before automated scoring of public-speaking activities is a scalable solution.

Writing

Writing assessment has a long history beyond the scope of this paper to review in full. Most writing assessments require the production of an actual writing sample that meets particular requirements. These are generally then scored via rubrics that assess everything from grammar and sentence structure to tone to organization. Many large-scale high-stakes assessment providers pay scorers to manually score essays, often with multiple graders per essay to ensure interrater agreement. Throughout the education system, teachers bemoan the amount of time it takes to score writing assignments to the extent that instructors do not assign them in large university classes unless there is grading help.

This has led to the broad field of research in automated essay scoring. There are a number of approaches to the problem, many of which are often combined. Machine learning techniques feed human-scored essays into machine-learning software which then learns the characteristics that differentiate essays with different scores. The software can then apply those rules to scoring previously unscored essays. Separately, software can actually be taught to look for meaning in passages, not just specific words (Landauer, Foltz, & Laham, 1998). It can learn that different expressions and constructions of language have the same meaning, allowing for scoring on content and not just on the surface features of the essay. Research results have been quite promising, suggesting computers can be trained to score like humans and are not subject to fatigue and bias (Shermis & Burstein, 2013). However, there is significant skepticism from instructors that computers can score, or

their areas of study and analyze writing style and rhetorical strategy. Comparing and contrasting writing from different fields helps students recognize the specific conventions and approaches that they must master to write effectively in their own disciplines. As an additional step, each student next compares and contrasts the piece of academic writing to popular media writing on the same topic. Students uncover through this exercise how changing the audience and, in many cases, communicative purpose necessitates changes in writing style and rhetorical strategy, and they do so in the context of their specific disciplines. Through lessons like this, Halasek helps students develop the skills necessary to write effectively in their specific fields of study and in their future careers.

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perhaps provide feedback, as well as humans (Bennett, 2015). As a result, many products that use automated scoring are sold as help with the writing process, to be used to revise drafts before turning in a final essay for human scoring.

Another potential solution to the extreme time demands of writing assessment in large classes is peer review. As discussed previously, peer review can provide effective learning opportunities for both the writer and peer reviewer. Additional research has demonstrated that peer review can be a valid and reliable form of assessment, with peers and instructors producing similar ratings when peer ratings are averaged across four or more raters (Cho, Shunn, & Wilson, 2006). In addition to averaging across multiple peer ratings, it is suggested that peer reviewers be provided ample scaffolding including clear instruction and rubrics, as well as given ample incentive to take the task seriously (Cho et al., 2006).

ASSESSING RECEPTION SKILLS
Active Listening

Comprehension tasks usually involve listening to a passage and responding to questions about it. In order not to confound the measurement of listening skills with writing skills, these questions are generally selected-response as opposed to open-ended questions. In the K-12 world, examples of this can be found on standardized tests such as the Stanford Achievement Test and the Iowa Test of Basic Skills. The assessments more recently developed by the multi-state assessment consortia also include assessments of "speaking and listening" skills aligned to the Common Core standards. Compared to other skills discussed below, scoring of these assessment activities is relatively simple; it is generally a matter of simply scoring the selected-response items.

Beyond secondary education, most assessment of active listening comes from medical and counseling fields. These fields in particular require practitioners not only to listen for understanding but also to convey to the speaker that the message has been received and understood. In these two fields, this can be quite literally a matter of life and death, so there has been significant work invested in attempting to assess this skill. It is not easily assessed via traditional paper-and-pencil assessment methods, and, as such, nearly all assessments of active listening in these fields involve actual engagement in active listening, with either actual clients or role-playing individuals.

The listening of the examinee must then be rated. There is a debate about whether performance should be judged via one holistic rating or via a checklist that marks the presence or absence of specific behaviors. Proponents of the behavioral checklist argue that it provides greater standardization across raters and over time. Critics argue that the behavioral checklist reduces the interaction to easily observable behaviors and ignores the more general feelings the interaction produces for the client or patient. However, research suggests that more holistic ratings can be equally or more reliable than checklists (Cohen, Colliver, Marcy, Fried & Swartz, 1996) but that the correlations between holistic and checklist ratings are high. The research suggests that shorter holistic ratings can be valid and reliable measures.

In practice, there are many standardized rating scales for rating doctor–patient

interactions. Some of these are meant to be used by medical-school faculty for evaluating students while others are meant to be given to patients. A study examining fifteen of them for coverage, psychometric properties, and usability found that no single scale was high in all three categories (Schirmer et al., 2005).

Outside medicine, there is a growing recognition that people aspiring to careers in STEM fields also require active-listening skills. As such, researchers developed the STEM–Active Listening scale (Wilkins, Bernstein, Bekki, Harrison, & Atkinson, 2012). It has three elements:

1. a self-rating of skills;

2. a self-rating of confidence applying skills;

3. a scenario component.

The scenario component presented situations and then four reactions to the scenario. Participants were asked to rate how likely they were to use each of the four reactions. Unfortunately, investigation of the scale revealed that the scenario-based questions did not demonstrate good reliability, and scores on individual items that were supposed to measure the same thing did not closely relate to one another. The findings generally suggest that observing skills in a paper-and-pencil environment is difficult.

Finally, there has been one attempt to create a generic active-listening assessment. The Active-Empathic Listening Scale (AELS) was originally developed to assess effective versus ineffective listening from the point of view of customers via self-report (Drollinger, Comer, & Warrington, 2006). It was then adapted to a more general social context (Bodie, 2011). Finally, it was adapted so ratings could be made by either the other participant in the dialogue (Bodie, Jones, Vickery, Hatcher, & Cannava, 2014) or an objective observer (Bodie & Jones, 2012). There is preliminary evidence for the validity and reliability of the measure.

Reading Comprehension

Reading-comprehension assessment is an exceedingly vast area with a research literature too substantial to review meaningfully here. A key challenge in reading-comprehension assessment is to develop theoretically based, psychometrically sound measures. Challenges and approaches are detailed by McNamara (2012) and Paris and Stahl (2005).

ASSESSING INTERCULTURAL COMMUNICATION SKILLS

There are many potential methods for assessing intercultural communication skills. A recent survey of university instructors revealed that using a mix of qualitative and quantitative measures was common and that all ten potential assessment types listed (e.g., case studies, self-report, and judgments of others) received at least 85 percent agreement as acceptable (Deardorff, 2006).

Intercultural communication skills are often assessed alongside knowledge of cultural-communication norms. This is sensible, given that knowledge of cultural norms is necessary to enact intercultural communication skills effectively. Knowledge of cultural communication norms can be assessed via:

- self-rating scales;

- case studies;

- awareness tests.

Yu (2012) provides an excellent overview of the definitions, strengths, and weaknesses of various methods. Self-rating scales ask individuals to rate their own knowledge of cultural norms. Case studies provide situations and scenarios and ask individuals to identify the key cultural issues in the case and how they should be addressed. These can often cross into application of awareness, but usually case studies ask participants what they would do rather than have them actually do that activity. Awareness tests use traditional assessment questions to measure understanding of history, geography, environment, politics, religion, socioeconomics, social etiquette, and values of a target culture (Corbitt, 1998; Valette, 1986). Generally, these questions can be categorized into "what" and "why" questions. The "what" questions assess students' knowledge of basic factual information while the "why" questions assess students' knowledge of deeper cultural values. An example of this type of assessment is the Global Awareness Profile (GAP) Test, which includes questions on six geographic areas: Asia, Africa, North America, South America, the Middle East, and Europe (Corbitt, 1998).

The ability to apply this awareness to communication can be assessed with:

- self-rating scales;

- case studies;

- observation of interactions or presentations;

- ratings of written work (single pieces or portfolios).

Self-rating scales ask participants to rate not their knowledge, as above, but their ability to apply it. For example, one such scale asks participants to rate themselves on a five-point Likert scale from strongly agree to strongly disagree on statements such as "I try to understand gestures when interacting with people from other cultures" (Mukherji & Jain, 2015). These self-assessments demonstrate good reliability and internal consistency; however, the agreement of self-ratings to other more objective measures of assessment is largely unknown.

The challenge with more performance-based measures such as case studies, observations, and ratings of written work lies in reliable scoring. Again, research suggests that rating scales and rubrics can help create more reliable assessments. For example, the Behavioral Assessment Scale for Intercultural Communication (Koester & Olebe, 1988) contains scales assessing display of respect, interaction posture, orientation to knowledge, empathy, task-role behavior, relational role behavior, interaction management, and tolerance for ambiguity. Experts observe the examinee's interactions and then complete ratings in each of these categories.

Image by Santanu Das

Conclusions and Recommendations

The research reviewed in this paper highlights a number of important conclusions with respect to teaching and assessing communication skills. These conclusions and associated recommendations for teaching and assessment are summarized in Table 4. The recommendations do not encompass all specific teaching and assessment practices evidenced by the research reviewed here. Instead, they are intended to provide a general set of shared best practices that, if enacted, can help learners everywhere receive excellent training and assessment in communication.

CONCLUSION	RECOMMENDATION
Communication skills are associated with personal, academic, and career success	Teach communication skills explicitly throughout all levels of education
Core communication skills extend beyond those required for fundamental reading, writing, speaking, and listening fluency	Provide direct instruction in higher-order skills such as identification of desired outcomes, channel selection, and active listening
Peer feedback has been shown to benefit speaking, reading, and writing skills and to be a valid form of assessment when implemented properly	Incorporate peer feedback into communication-skills teaching and assessment, ensuring that peers receive proper training and support (e.g., rubrics) and that students receive feedback from multiple peers
In written and oral presentation, crafting a clear message involves an iterative revision process requiring numerous self-regulatory skills	Provide direct instruction in the process of effectively planning and iteratively revising written and oral presentations
Role play can serve as an effective means for teaching and assessing interpersonal communication	Utilize role play in teaching interpersonal communication
Self-assessment of video recordings can improve learning of public speaking and interpersonal communication	Have students view and self-assess video of presentations and role plays
Students must be prepared to communicate effectively with people from different cultures	Teach students to recognize and account for cultural differences in communicative norms
The modern world presents a proliferation of digital communication channels, but research on teaching and assessing effective communication skills in those channels is lacking	Explicitly teach and assess communication skills for modern digital channels Research effective teaching and assessment strategies for communication skills in modern digital channels
Many instructors use locally developed assessment techniques	Utilize the evidence-centered design framework to develop assessment techniques that accurately capture the communication skills students are meant to acquire
A variety of established rubrics have proven useful for assessing a variety of communication skills	Utilize rubrics in assessment and consider using or adapting existing validated rubrics
Recent years have seen advances in development of automated assessment systems, though there is skepticism surrounding their validity	Avoid using current automated assessment systems for high-stakes summative assessment but consider using them to provide formative feedback when doing so might otherwise not be possible (e.g., in large student-to-teacher ratios)

Table 4   Conclusions and recommendations.

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