

Analysis of Instruments and Rubrics in Measuring Students' Communication Skills

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ABSTRACT

Education has transitioned into the knowledge era, presenting new challenges that highlight the importance of 21st-century skills. Emphasizing 21st-century skills prepares students to navigate a world demanding enhanced cognitive abilities and creativity, with a focus on soft skills over hard skills. Strong communication skills are crucial for effective teaching and learning, enabling students to articulate thoughts, listen actively, and collaborate in group settings. Structured evaluation tools and rubrics are vital for assessing these competencies, aiding teachers in evaluating students' oral communication abilities within the framework of 21st-century skills. The study uses qualitative methodology with literature review techniques, collecting data from Scopus and analyzing it in four stages: data collection, data reduction, data presentation, and the drawing and verification of conclusions. The analysis shows that various communication instruments and rubrics are used by educational institutions to enhance 21st-century skills. Between 2018-2023, five articles used communication skill instruments in their research, featuring at least four commonly used rubrics: Greenstein, CCSS, PISA, and UNT.

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1. INTRODUCTION

Education has transitioned into the knowledge era, presenting a multitude of new challenges that must be addressed. Education has transitioned into the knowledge era, presenting new challenges that demand learners to acquire skills essential for learning and innovation, media and technology usage, and life skills (Sulistyarningsih et al., 2019). By emphasizing these competencies, students are expected to navigate a world that requires enhanced cognitive abilities and creativity. In this context, the mastery of soft skills, particularly communication, is prioritized over the mere acquisition of hard skills (Maulidah, 2019).

The cultivation of student skills fundamentally emphasizes the development of 21st-century competencies, including critical thinking, creativity, collaboration, communication, and literacy enhancement (Kurniati et al., 2022). Communication is essential in the teaching and learning process, serving to transfer knowledge and facilitate the exchange of ideas. Strong communication skills enable students to engage and collaborate effectively in group settings. They can clearly articulate their thoughts, listen actively, and contribute meaningfully to group discussions (Tekad & Pebriana, 2022).

Communication skills are essential not only for the personal development of students but also for equipping them to meet the demands of contemporary advancements. Structured evaluation tools provide a systematic framework for assessing students' communicative competencies in the context of 21st-century skills. These instruments are designed to aid teachers in evaluating students' oral communication abilities and to serve as guidelines for communication skill assessments (Usman et al., 2022). The application of these instruments is generally supported by rubrics, which act as benchmarks for measuring students' skills.

Communication skills are an essential aspect that students must possess to navigate the challenges of the modern global era. In the realm of education, these skills not only play a critical role in students' academic success but also serve as a determinant of their achievement in the workforce and social life. As the paradigm of 21st-century education continues to evolve, the need to evaluate students' communication skills effectively becomes increasingly urgent. Systematically designed assessment instruments and rubrics are indispensable tools for

identifying, measuring, and improving students' communication competencies in a structured manner (Jonsson & Svingby, 2007). This study aims to examine various rubrics and instruments used to measure students' communication skills.

2. RESEARCH METHOD

The research methodology adopted in this study is qualitative, utilizing literature review techniques. This approach involves a series of systematic activities aimed at collecting relevant information pertaining to the topic or issue under investigation, with literature serving as the primary reference source (Okoli & Schabram, 2012). Data collection was carried out using the Scopus database, which yielded pertinent journal articles. The qualitative data analysis process comprises four stages: data collection, data reduction, data presentation, and the drawing and verification of conclusions.

Data analysis was conducted thematically to identify type of research, research objectives, and instrument that used within the context of 21st-century education. In conducting inductive data collection in this study, the categories include the type of research, which is biological education research, the research objective of measuring students' communication skills in a learning context, and the research instrument focusing on communication instruments. Additionally, the database used is limited to journals with a minimum publication year of 2018. Through this method, the study aims to provide a clear overview of the strengths, weaknesses, and relevance of the instruments and rubrics in supporting the development of students' communication skills.

3. RESULT AND DISCUSSION

Through data collection and reduction using the Scopus database. Scopus-indexed journals are one of the platforms that support high-standard scientific publications with international coverage. Combined with their rigorous peer-review process, quality, relevance, and credibility, Scopus articles align with global academic standards and enhance research quality. numerous journal articles pertinent to the research topic were identified. The findings are displayed in Table 1.

Table 1. The results of data collection and reduction of various communication skills instruments

No	Writer	Article Title	Type of Research	Research Objectives	Instruments
1	Hidayati et al. (2020)	Cognitive Learning Outcomes: Its Relationship with Communication Skills and Collaboration Skills through Digital Mind Maps-Integrated PBL	Multiple correlation research	Investigating the simultaneous relationship between communication skills and collaborative skills on students' cognitive learning outcomes using the Digital Mind Maps-Integrated PBL model.	Observation sheet of communication skills
2	Martini & Nainggolan (2018)	Application of think talk write model (TTW) to improve communication ability of grade XII students on biology learning	Classroom Action Research	Assessing the level of students' oral and written communication through the implementation of the Think Talk Write (TTW) learning model on the topics of Growth and Development in Cycle I and Enzymes (Metabolism) in Cycle II.	Oral communication: observation sheet Written communication: 10 descriptive test questions
3	Wildan et al. (2019)	A Stepwise Inquiry Approach to Improving Communication Skills and Scientific Attitudes on a Biochemistry Course	Pre-experiment	Testing the implementation of a phased inquiry approach in improving communication skills and scientific attitudes.	Written communication: assessment instrument for inquiry reports based on (Hoyo, 2003).
4	Hardyanto et al. (2023)	Using Lesson Study to See Collaboration and Communication Skills Improvement on Biology Education Graduate Students in Online Learning	Classroom Action Research	Improving collaboration and communication skills among graduate students in Biological Education in online learning during the COVID-19 pandemic.	Observation sheets with rubrics adapted from Greenstain (2012).

5	Aslan (2021)	Problem-based learning in live online classes: Learning achievement, problem-solving skill, communication skill, and interaction	Quasi-Experimental Research	Investigating the effects of first aid training in live online classes using a problem-based learning approach on learning achievement, problem-solving skills, and communication skills, and learner interaction.	Communication skills assessment sheet through observation referring to (Korkut and Bugay, 2014).
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The results in Table 1 show that out of five data sets, four use observation sheets as instruments to measure students' communication skills. Communication skills assessment instruments serve as evaluation tools to determine the effectiveness of teaching methods. The evaluation results can form the basis for improving ineffective teaching methods and strengthening successful approaches in developing students' communication skills. Evaluation is a planned activity aimed at understanding the state of an object using instruments, with the results compared to benchmarks to draw conclusions (Magdalena et al., 2023).

Observation sheets are pivotal in assessing students' communication skills, enabling educators to directly observe and document students' communicative behaviors during learning activities (Putri, 2023). Their main advantage is the ability to capture the subtleties and situational contexts of student interactions, which are challenging to assess with written instruments alone. This method allows educators to provide more precise and comprehensive feedback, aiding in the creation of learning strategies that are customized to meet the specific needs of each student.

Self-assessment and peer assessment are supplementary tools for measuring students' communication skills. Self-assessment is acknowledged as an effective method for evaluating these skills, providing profound insights into students' communication abilities and motivating them to enhance their proficiency (Masruria & Anam, 2021). This approach allows students to reflect on and assess their own communication skills, thereby increasing their self-awareness of individual strengths and weaknesses within the context of communication (van der Vleuten et al., 2019).

Peer assessment, also known as peer evaluation, is a valuable tool for gauging students' communication abilities. It offers diverse perspectives on their skills and benefits by providing feedback, engaging cognitive and metacognitive processes, boosting motivation, fostering collaborative and self-regulated learning, and enhancing performance (Astuti et al., 2022). Moreover, it enables a deeper insight into students' progress and aids in grasping essential concepts and self-evaluation skills crucial for communication skill development. As an alternative assessment approach, peer assessment empowers students to articulate their viewpoints (Setemen et al., 2019). Choosing suitable assessment tools for evaluating students' communication skills entails careful consideration and strategic planning by researchers. Opting for observation sheets allows researchers to tailor observation criteria to focus on key aspects of desired communication skills, adapted to classroom contexts.

Developing skill instruments for students is closely linked to the rubric that will be used as a reference for assessment criteria. Communication skill instruments encompass methods and tools used to measure students' communication abilities, while communication skill rubrics provide an evaluation framework that specifies criteria and levels of achievement for each aspect of communication skills assessed. Each type of rubric has its strengths and weaknesses depending on its context of use, and the selection of the rubric type should be tailored to the desired assessment objectives and characteristics (Andriani & Hamdu, 2021).

Communication Skill Rubric

The communication skill rubric to be analyzed in this study is based on indicator data from Greenstein, CCSS, PISA, and UNT, as shown in Table 2.

Table 2. Results of data collection and reduction of various communication skill rubrics.

No	Rubrik	Year	Indicator
1	Greenstein	2012	6 Indicators: Oral communication, receptive communication, distinguishing intentions, using communication strategies, communication for a purpose, presentation skills.
2	Common Core State Standards (CCSS)	2010	6 Indicators: Writing informative texts, producing clear writing, presenting information and findings that can be understood by the audience, adjusting speaking style, actively participating in conversations, and integrating and evaluating presented information.
3	PISA	2019	1 Indicator (Continuing with other skills): Understanding the communicative context and dialoguing with respect.
4	UNT	2014	4 Indicators: Statement of purpose, organization/structure, content development, and accuracy.

Communication Skills Rubric by Greenstein 2012

The initial rubric was created by Laura Greenstein in her book "Assessing 21st Century Skills." According to Greenstein (2012), communication skills include various aspects such as delivering messages to a chosen audience (other students) and being receptive to communication (reading, listening, expressing opinions, and utilizing multiple sources to convey ideas). Greenstein outlined six indicators in her communication skills rubric, with each indicator assessed on a four-level scale: a score of 4 signifies exemplary performance, a score of 3 denotes proficiency, a score of 2 indicates basic competence, and a score of 1 represents a novice level.

The first indicator of Greenstein's communication skills is oral communication. This essential process in human interaction involves the direct exchange of messages through spoken words and sounds. According to (Berkhof et al., 2011), oral communication is the exchange of information between two or more individuals using words or sound symbols. Words and vocal intonation are critical in conveying the meaning and nuances of a message. Oral communication is crucial for fostering mutual understanding and building healthy interpersonal relationships. Greenstein suggests that students will excel in oral communication if they can speak clearly, with appropriate speed, volume, and articulation, all of which enhance communication. Factors that may hinder students' oral communication include anxiety, lack of confidence, and an inability to organize ideas effectively. Students with low confidence might avoid active participation in communication situations, limiting the development of their oral skills (Pratama et al., 2019). Factors that support students' oral communication abilities include high self-confidence, good organizational skills, and adaptability to various communication contexts. Confident individuals who can effectively organize their messages are more likely to succeed in oral communication, build effective connections with listeners, and achieve their communicative goals more efficiently (Torky, 2014).

The next indicator in Greenstein's framework is receptive communication (listening, responding, and observing). Receptive communication refers to the process of receiving and understanding messages or information conveyed by others. This type of communication requires the receiver to be active in interpreting the received information, using skills such as careful listening, thorough reading, or attentive observation (Aggarwal, 2022). At the exemplary level of Greenstein's receptive communication, students can distinguish facts from others' opinions, recognize the intent of the conveyed message, summarize the main ideas from others' viewpoints, and identify support from various perspectives. By listening, reading, and understanding information carefully, students can better grasp lesson material, optimize their learning experience, and enhance knowledge retention. Receptive communication skills also enable students to participate actively in class discussions, ask relevant questions, and respond appropriately to teachers' instructions (Swandari & Jemani, 2023). Students may struggle with receptive communication due to various factors, such as a lack of listening or reading skills, making it difficult for them to capture and understand information effectively.

The next indicator is distinguishing intent. Students are considered proficient if they can identify and interpret explicit messages and draw logical conclusions. Students who can discern intent in communication have an advantage in understanding messages holistically and responding more accurately. The fourth indicator in Greenstein's communication framework is using communication strategies. Students are deemed exemplary in this indicator if they can produce clear, accurate, and reflective communication. Unlike previous indicators, this one has only three levels. At the basic level, students are able to produce only fundamental communication. Clear communication helps students convey ideas and information accurately, preventing confusion or misunderstandings (Samudra et al., 2023). Accuracy in communication ensures that the message conveyed aligns with its original intent, minimizing the risk of misinformation and building trust between the communicator and the recipient. Meanwhile, the ability to produce reflective communication allows students to consider the impact and implications of their words, enriching both self-understanding and understanding of others, and improving their communication skills over time (Susanto et al., 2020).

The next indicator in Greenstein's framework refers to communication for a purpose. Students are considered proficient if they can identify the purpose and organize and present information to achieve it fully. Understanding the purpose of communication helps students structure their messages clearly and purposefully, avoiding ambiguity, and ensuring that the conveyed message aligns with the original intent (Mahadi, 2021). Students who can effectively present information are able to make presentations or speak with confidence and deliver messages with maximum impact.

The final indicator in Greenstein's framework is presentation skills. Presentation activities involve oral communication aimed at conveying information, ideas, or concepts to a general audience. Good speaking skills can be developed by honing, refining, and practicing all existing potentials (Fitrananda et al., 2018). Students need to possess presentation skills because this ability not only helps them build confidence and public speaking skills but also becomes crucial in the academic world (Berkhof et al., 2011). Students are considered exemplary in presentation skills if they remain calm and precise, respond to audience cues with appropriate tone, depth, and speaking tempo. The primary advantage of using Greenstein's communication rubric is its ability to measure specific aspects of students' communication with a high level of detail. Teachers can assess the extent to which students can clearly convey ideas, comprehend questions or instructions, and actively participate in discussions.

This rubric also helps teachers identify areas for improvement that students may need, thereby providing additional support or necessary communication skill development.

Communication Skills Rubric by Common Core State Standards (CCSS) 2010

Several content standards established as the foundation of the Common Core State Standards (CCSS) target communication skills in writing, speaking, and listening as follows: 1) Writing informative texts to examine and convey complex ideas and information. 2) Producing clear and coherent writing appropriate to the task, purpose, and audience in terms of development, organization, and style. 3) Presenting information and findings in a way that is understandable to listeners using appropriate methods. 4) Adapting speaking styles to various contexts and communicative tasks. 5) Actively participating in conversations with different peers or partners. 6) Integrating and evaluating information presented in various media formats.

The CCSS do not specify in detail how communication is scored, indicating that researchers can develop their own communication skills assessment patterns freely, using the six communication aspects outlined in the CCSS as a reference. The communication measured in the CCSS includes both oral and written communication. First, students are expected to write informative texts to examine and convey complex ideas and information; this indicator refers to students' written communication in writing informative texts. Second, still within the context of written communication, students should be able to produce clear and coherent writing appropriate to the task, purpose, and audience. The sixth indicator also pertains to written communication, where students are expected to integrate and evaluate information presented in different media formats. The ability to convey ideas, information, or messages through writing allows individuals to share knowledge, express viewpoints, and build mutual understanding. The key to mastering written communication includes using concise and familiar words, short sentences and paragraphs, technical terms carefully, active sentences, examples and graphics, logical thoughts, and avoiding unnecessary and discriminatory words (Prabavathi & Nagasubramani, 2018).

The third indicator involves presenting information and findings comprehensible to listeners using appropriate methods. The fourth indicator is adapting speaking styles to various contexts and communicative tasks. The fifth indicator is actively participating in conversations with various partners or peers. These three indicators fall within the context of oral communication, where students can speak about their findings during the learning process, and the audience can understand the information. Oral communication uses a clear and straightforward speaking style and involves interaction between the speaker and the audience. Oral communication enables the direct exchange of ideas and information, facilitating more dynamic and interactive discussions. Students can quickly respond, ask questions, and provide spontaneous feedback, creating a more collaborative learning environment. Through active oral and written communication, students can build knowledge by observing and receiving information and then noting it as an effort to acquire new knowledge (Maridi et al., 2019).

Overall, the rubric developed by the CCSS encompasses two major branches of student communication skills: verbal communication, which consists of oral and written communication. This general depiction of the rubric will facilitate researchers in developing their own instruments to measure student communication using different models, media, and strategies according to their needs.

Communication Skills Rubric by PISA 2019

The rubric developed by PISA integrates cognitive processes as a cohesive whole, emphasizing the importance of understanding cognitive processes in the context of communication skills. PISA's approach to communication skills includes understanding differences in communication, with subcategories such as comprehending communicative contexts and engaging in respectful dialogue. There are three proficiency levels: basic, intermediate, and advanced. At the basic level, students are considered to lack effective communication skills tailored to the audience and context. At the intermediate level, students begin to recognize how to communicate appropriately and strive to align their communication with the context. At the advanced level, students are fully aware of their communication style and understand the importance of effective communication that is appropriate for the audience, purpose, and context. Additionally, PISA emphasizes students' sensitivity to what others are communicating and their ability to be good listeners who appreciate others.

One of the advantages of the PISA rubric is that it evaluates not only academic abilities but also the social and emotional aspects of students, reflecting a commitment to assessing more than just academic knowledge. Good communication skills encompass both verbal and written abilities, requiring a deep understanding of social contexts. As students learn to appreciate others' opinions, they develop empathy and a better understanding of diverse perspectives and experiences. This not only enriches interpersonal interactions but also helps create an inclusive learning environment where every student feels valued. When communication is linked with social skills, students learn to listen earnestly, respect differences, and build positive interpersonal connections, thus enhancing their overall interpersonal communication (Putra & Jamal, 2020).

Communication Skills Rubric by UNT 2014

The rubric developed by experts at the University of North Texas includes 4 indicators, each with levels ranging from novice, developing, proficient, to advanced. The first indicator is statement of purpose, where students are expected to articulate good ideas or main ideas that can engage listeners in identifying a problem statement. The second indicator is organizational structure, finding connections between ideas and coherence of content within topic sentences, recognizable organizational patterns, deliberate transitions, or other structural conventions. The third indicator is content development, where the developed content reaches its maximum stage and can be argued. The final indicator is accuracy in proficient delivery.

The analysis of communication skills by UNT is developed within the language subject, so if it is to be linked to other learning patterns, adaptation or re-development stages are recommended. Accuracy of content in communication plays a central role in ensuring effective information transmission and avoiding misunderstandings. When someone communicates accurately, the message reflects accurate facts and aligns with the speaker's intention. This builds trust between the communicator and the message receiver, creating an environment where information can be well considered.

This rubric can be linked to the assessment of media learning in communication relations with content to be taught to students. Media learning is a communication tool used in the learning process. The presence of media learning facilitates teachers in delivering learning materials so that they become clear and do not present textual presentations that make students bored (Isnaeni & Hildayah, 2020).

4. CONCLUSION

The use of instruments and rubrics in measuring students' communication skills plays a crucial role in learning and assessment. Communication skills instruments provide concrete means to gather objective data about students' abilities, enabling educators to identify their strengths and weaknesses. Communication skills rubrics offer detailed guidance on assessment criteria and expected achievement levels, creating a consistent and transparent evaluation framework. For effective implementation, educators are recommended to design rubrics and instruments in alignment with the learning context, focusing on specific aspects of communication such as speaking, listening, writing, or collaboration. Additionally, the evaluation results provide insights into students' strengths and areas for improvement, helping them understand which aspects of their communication need enhancement. This integration creates a holistic assessment system that supports the comprehensive development of students' communication skills.

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