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Communication Skills Assessments and Rubrics In The Higher Education: A Meta-Analysis

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Abstract

Effective communication skills are crucial in the higher education system. Consequently, there is a growing concern about how higher education institutions can better equip students with the communication skills required for success in both academic and professional settings. The assessment of communication skills, especially in higher education, is complex and can have a substantial impact on students' academic achievements, preparedness for their careers, and overall professional growth. Due to this disparities and assessment challenges, this meta-analysis sought to answer the following research questions: (a) What are the assessments employed for communication skills in multi-discipline studies in higher education? (b) What are the "key findings" contributing to the issues of communication skills assessment in higher education? In this article, a meta-analysis was conducted to determine the types of communication skill assessments and other key findings concerning the assessment issues in this area. Sources were identified using Scopus, Web of Science, Wiley Online Library, Taylor & Francis Online and Springerlink, and, after inclusion criteria were applied, 21 samples of articles were included in the meta-analysis. The findings demonstrate the existence of issues from the aspects of audience, mode, and purpose of the assessments, which mainly are: (1) impact of language proficiency and ICT competency; (2) communication skills approach to non-scientific audience; (3) blended assessment and feedback communication; (4) use of explicit and direct teaching assessment; (5) critical thinking and opportunity for justifying scientific ideas; and (6) benefit of early and continuous communication tasks. The review finds an extensive gap on the communication skills assessment related to higher-order thinking and problem-solving abilities in junior students. This meta-analysis may be of great interest to university policymakers, language lecturers, and academic lecturers from other disciplines who are searching for the best assessments strategies to measure students' communication skills.

Keywords: assessment, communication skills, higher education, rubrics

Abstrak

Kemahiran komunikasi yang berkesan adalah penting dalam sistem pendidikan tinggi. Hal ini menyebabkan terdapat peningkatan terhadap tahap kebimbangan tentang bagaimana institusi pendidikan tinggi dapat melengkapkan pelajar dengan kemahiran komunikasi yang diperlukan untuk berjaya dalam kedua-dua bidang akademik dan profesional. Penilaian kemahiran komunikasi terutamanya dalam pendidikan tinggi adalah kompleks dan boleh memberikan kesan yang besar terhadap pencapaian akademik pelajar, persediaan mereka untuk kerjaya dan perkembangan profesional secara keseluruhan. Disebabkan oleh perbezaan dan cabaran penilaian ini, analisis meta ini bertujuan untuk menjawab persoalan kajian berikut: (a) Apakah penilaian yang digunakan untuk kemahiran komunikasi dalam kajian multidisiplin di pendidikan tinggi? (b) Apakah "dapatan utama" yang menyumbang kepada isu-isu penilaian kemahiran komunikasi dalam pendidikan tinggi? Dalam artikel ini, satu analisis meta telah dijalankan untuk menentukan jenis penilaian kemahiran komunikasi dan dapatan utama lain berkaitan isu-isu penilaian dalam bidang ini. Sumber-sumber dikenal pasti menggunakan Scopus, Web of Science, Wiley Online Library, Taylor & Francis Online dan Springerlink dan selepas kriteria untuk rangkuman ditetapkan, 21 sampel artikel dimasukkan dalam analisis meta ini. Penemuan menunjukkan wujudnya isu-isu dari aspek audiens, mod dan tujuan penilaian yang utama iaitu: (1) kesan penguasaan bahasa dan kecekapan ICT; (2) pendekatan kemahiran komunikasi kepada audiens bukan saintifik; (3) penilaian bersepadu dan komunikasi maklum balas; (4) penggunaan penilaian pengajaran yang eksplisit dan langsung; (5) pemikiran kritis dan peluang untuk membenarkan idea saintifik; dan (6) manfaat tugas komunikasi awal dan berterusan. Kajian ini menemui jurang yang besar dalam penilaian kemahiran komunikasi berkaitan dengan kemahiran berfikir aras tinggi dan penyelesaian masalah dalam kalangan pelajar junior. Analisis meta ini mungkin menarik minat penggubal dasar universiti, pensyarah bahasa dan pensyarah akademik dari disiplin lain yang sedang mencari strategi penilaian terbaik untuk mengukur kemahiran komunikasi pelajar.

Kata kunci: penilaian, kemahiran komunikasi, pendidikan tinggi, rubrik

1.0 INTRODUCTION

Assessment of communication abilities is critical in all disciplines of higher education (including education, engineering, science, medicine, and art) (Zhai & Wibowo, 2023; Byram, 2020). The facts and knowledge could be clearly conveyed using a variety of communication formats and delivery methods, such as sophisticated charts, diagrams, tables, figures, or graphs (Alias & Osman, 2015). Communication is broadly divided into verbal/oral, written, and interpersonal communication, with trending categories including visual, audio, and online communication. Verbal/oral communication is defined as the ability to talk audibly with the assistance of visual aids and nonverbal clues to enhance meaning delivery, which includes components of speech, presentation, conversation, and interpersonal contact

(Alias & Osman, 2015). While academic writing is employed as a means of acquiring disciplinary subject and gaining dissertation expertise within a field, academic writing is also used as a means of communicating academic information (Herper & Vered, 2017). Interpersonal communication could be defined as the way of person interaction which includes listening, empathy, social responsibility and social awareness in which may signifies as part of emotional intelligence (Sarwari, Ibrahim & Nor Ashikin, 2016). Visual communication is reflected by pictorially literate, or having the ability to easily produce visuals for communicating about one's thought and concepts. With the increase of international students and the introduction of Online Distance Learning (ODL) or Distance Education (DE) courses by universities, several intercultural and online communication research are being conducted. Thus, intercultural communication is viewed as the capacity of individuals to engage in interpersonal relationships in a multicultural setting, to acquire a foundational understanding of different social and cultural norms, and to appreciate these differences (Sarwari & Abdul Wahab, 2017). On the other hand, online communication could be viewed as technology advancements that largely eliminate the communication difficulties that typically occur in ODL or DE (Vlachopoulos & Makri, 2019).

Communication skills are one form of generic talent that plays a vital role in measuring a student's potential to become more versatile and competent in the workplace. Malaysia Ministry of Education emphasizes the importance of communication skills in the work of graduate students in a variety of areas (Said, Mahamod & Alias, 2013). Higher education institutions, whether public or private, have utilized a variety of alternative assessments to evaluate students' communication skills. These assessments are believed to enhance students' communication skills. To what extent, however, is uncertain and unassured, as the communication competence of students is influenced by numerous cofactors. In addition, employers frequently lament the graduates' lack of generic abilities such as communication, problem-solving, interpersonal skills, and the flexibility to handle challenges in a variety of contexts (Kamal et al., 2014).

Alternative/summative/authentic assessment is an approach to determine students' learning and thinking that focuses on higher-order thinking and problem-solving abilities (Alias & Osman, 2015). These abilities are crucial in preparing students for their future careers and to develop skills needed in the approaching era industrial revolution (IR) 4.0. Through alternative assessment, students been provided with ample chances to use information or skills in real life situations. This assessment explicitly exposes students to authentic activities, which cannot be accomplished through traditional testing. While alternative assessments can provide valuable insights into students' communication skills, they are not without their limitations and challenges. Researchers and educators should carefully consider these issues when designing and implementing alternative assessments of communication skills in higher education. Apparently, the scoring schemes or rubrics is also an important issue in addressing communication skills. The appropriate, standard and well-developed rubric should provide clear direction for educators on how to assess their students' communication skills in relation to specific learning outcomes. The experience to real life problems can be replicated in alternative activities, and the use of a rubric is the best method in assessing competencies that are needed in life (Othman & Awang, 2010). Therefore, the objective of this review is to overview the communication skill assessments employed in local and global multi-disciplines study of higher education as well as its "key finding" contributing to the issues of communication skills assessment/rubric in higher education.

2.0 METHODOLOGY

A systematic literature search and meta-analysis were conducted in accordance with the PRISMA guidelines for reporting systematic reviews and meta-analyses (Moher, Liberati, Tetzlaff, Altman & PRISMA Group, 2009). This meta-analysis used a structured methodology to synthesize the existing studies for future improvement of communication skills assessment in higher education. The objectives and intended methodology of this project were tabulated in the Table 1 Protocol for Meta-analysis (see Appendices).

The purpose of this study was to get an understanding of various sorts of communication skill assessments in order to develop the communication strategies of higher education students. In this study, the issues of diverse assessments towards many different features were also investigated. The purpose of this work was to provide answers to the following research questions:

(1) What are the communication skill assessments employed in local and global multi-disciplines study of higher education?
(2) What are the "key finding" contributing to the issues of communication skills assessment in higher education students?

Online databases were used to search pertinent published articles related to communication skills assessments and rubrics development in the higher education. Among the web-based service provider were Scopus, Web of Science, Wiley Online Library, Taylor & Francis Online and Springerlink. Additional information of relevant studies was searched using Google Scholar. All the articles were scanned to retrieve the related studies on "communication skills assessment in higher education". Since there has been limited research when term of "higher education" was used, a term "university" was replaced. Research focusing on those assessments were rather assorted, specific keywords terms were used such as "communication skills", "communication", "universities", "graduate student" and "higher education". During the initial stage, there was no limitation on searching relevant studies, all concept papers, research papers, conference proceedings and books. Therefore, the search found a total of 1517 papers which stated about "communication skills assessment in university". From the overview of the current studies in worldwide, United States was the explicit leader than other countries and majority studies were in Social Sciences, Medicine and Nursing discipline areas.

On the other hand, only 22 studies were documented in Malaysia. Universiti Kebangsaan Malaysia was the highest affiliation published and majority studies was also in Social Sciences area, with instead engineering and computer science/medicine area followed. During the second stage, the number of articles found reduced to a total 155 which fulfilled these criteria: (1) The selected published research and concept papers were limited to only those from 2008 to January 2020 (2) The studies which stated communication skills assessments among higher education students, (3) The index literature search conducted in database (4) The studies that well fit the research questions of the study. Some articles found during the searching phase were excluded as the authors did not mention or elaborate clearly the type of assessment and construct used in their studies as well as article were failed to access. Figure 1 shows the literature selection process as according to PRISMA 2009. The papers were analyzed and summarized according to the research questions, as presented in Table 2 (see Appendices).

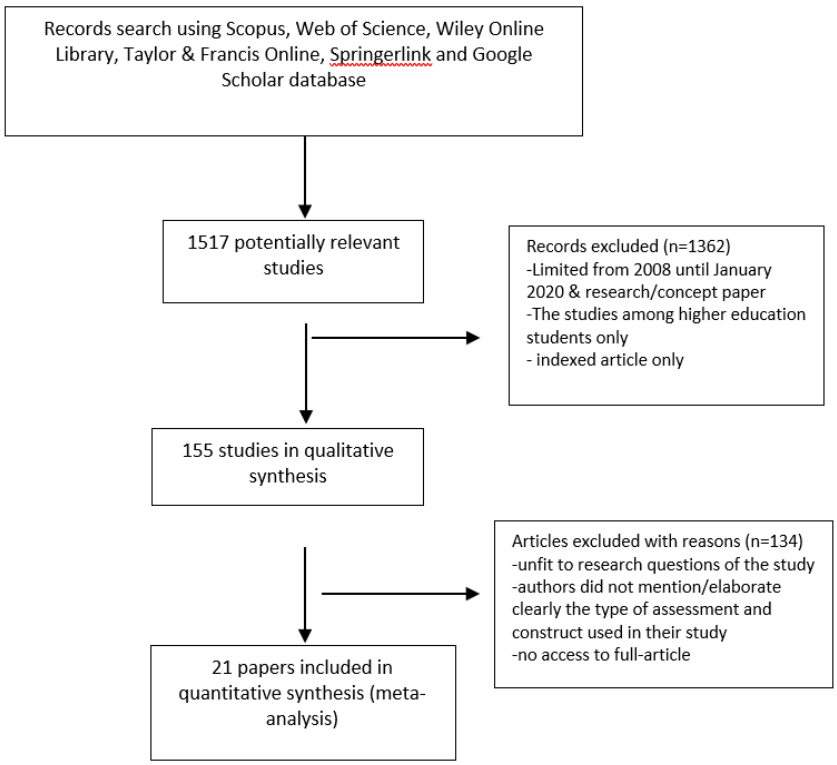

Figure 1. Literature selection process (adapted from PRISMA 2009)

■3.0 RESULTS & DISCUSSIONS

Table 1 (refer to Appendices) displays twenty-one research studies that conducted assessment to evaluate communication skills in higher education level. Eight studies were conducted in Malaysia from UMP (3), UKM (2), IMU (2) and UTM (1). Other thirteen studies were done in Australia (6), United States (2), Qatar (1), New Jersey (1), Spain (1), Finland (1) and Portugal (1). Most of the study design used were quantitative (7) and mixed method (6). It was followed by qualitative study (2), intervention study (2), concept study (2), case-blinded control (1) and quasi-experimental study (1). Majority of the disciplines involved were engineering (4), general (4), medicine included pharmacy and nursing education (4), education (3), science (3) and information system (1). The "key finding" contributing to the issues of communication skills assessment in higher education can be classified into three aspects; audience, mode, and delivery. Issues in term of audience are: (1) impact of language proficiency and information and communications technology (ICT) competency and; (2) communication skills approach to non-scientific audience. Issues for mode aspect: (3) blended mode of assessment and feedback and; (4) use of explicit and direct teaching assessment. Meanwhile issues for delivery aspect: (5) critical thinking and opportunity for justifying scientific ideas; as well as; (6) benefit of early and continuous communication task.

3.1 Impact Of Language Proficiency And Information & Communications Technology (ICT) Competency

Language proficiency and Information & Communications Technology (ICT) competency can have a significant impact on communication skills in higher education. The ability to communicate and connect with others, especially those from various backgrounds and cultures, is greatly facilitated by a shared command of the language. Effective communication in higher education often requires a high level of language proficiency. Students who are not proficient in the language of instruction may struggle to understand lectures, participate in discussions, and complete assignments. Poor language proficiency can also make it difficult for students to express themselves clearly and coherently in written and spoken communication. A lack of English language proficiency (ELP) and disparities in accents, among 220 local and international students, had detrimental effects on the interactions process, contacting, and collaboration among the students, as reported by Sarwari, Ibrahim, and Nor Ashikin (2016). This had a considerable impact, particularly on students with low ELP scores. Most of them were dissatisfied with their ability to communicate with students from other accents and countries (Sarwari, Ibrahim & Nor Ashikin, 2016). Students with a high ELP may find it easier to interact with people of other nations. Education level and intercultural sensitivity were also believed to influence relationships among Asian multi-national students (Sarwari et al., 2018; Sarwari & Abdul Wahab, 2017). Sarwari et al. (2018) discovered that PhD students demonstrated significantly higher levels of interpersonal communication competency in the three Interpersonal Competence Questionnaire (ICQ) constructs of initiation, disclosure, and emotional support, directly improving their personal and cultural skills as well as knowledge (ICT) competency.

Individuals will speak in the language they find most comfortable. This is consistent with the findings of Romero- Martin et al. (2017), who discovered that "oral and written communication in the native language" was the third most highly valued factor evaluated by

students, graduates, and professors in Spanish universities. This study also revealed that the teacher-student contact was the most significant aspect of the communication assessment procedure, followed by competence in interpersonal relationships. Numerous authors concurred that the positive input and communication of students in their education and assessment will be a substantial contributor to their abilities and accomplishments, as demonstrated by this research (Hamodi et al., 2017; ENQA, 2014). Regarding the significance of interpersonal communication, the validity of the communication skill training (CST) programme among 128 pre-clinical medical students using four assessment tools—the Interpersonal Communication Inventory (ICI), Communication Skills Attitude Measures (CSAM), Communication Skills Video Assessment (CSVA), and Communication Skills Training Evaluation (COSTE)—had revealed that students who were competent in interpersonal communication had positive attitudes and performance in class (Yeap, 2008). Research has shown that language proficiency can have a significant impact on academic performance. This is also in line with a study by Li and Gao (2015) who found that language proficiency was positively correlated with academic achievement among Chinese international students in the United States.

Assessment of communication skills is important for efficient communication not only in clinical practice but also in the field of education. A comparison study of 127 Malay language specialist students from public universities (PU) and teacher training institutes (TTI) found that communication abilities were highly valued in both groups of future teachers, except for the use of non-verbal skills. The Malaysian Generic Skills Inventory (MyGSi) revealed that PU students scored higher than TTI students in terms of their abilities to convey ideas orally and in writing, deliver speeches, negotiate, interact, and summarize (Said, Mahamod & Alias, 2013). These results suggested that, particularly among Asian students, language competence and competency may have an impact on students' interpersonal, intercultural, and nonverbal communication skills. By having greater language proficiency and competence overall, the culture norm of Asians, especially Malay language speakers, who are not vocal, introverted, and highly reluctant to express any opposing viewpoints, should be well honed and strengthened.

ICT competency, or the ability to effectively use digital technologies for communication and information exchange, has become increasingly important in higher education. Students who are proficient in ICT can use a range of tools and platforms to communicate with their peers and instructors, collaborate on assignments, and access course materials. In terms of ICT competency among students, graduates, and lecturers, Romero-Martin et al. (2017) discovered that the scores for the item "specific IT skills" were medium-low while the scores for the item "usage of ICT" were medium in general. In contrast to prior findings, which revealed that both professors and students viewed ICT abilities as a crucial to improving teaching and learning processes (Al-araibi et al., 2019; Agrawal & Mittal, 2018). When comparing lecturer and student scores and lecturer and graduates scores, most lecturers had the highest perception of ICT use. Meanwhile, students scored the lowest, indicating that university students still lacked sufficient abilities and competence in using ICT. Despite the widespread belief that all students are ICT experts, Romero- Martin's findings do not appear to confirm this (Al-araibi et al., 2019). In today's digital age, technology has become an integral part of communication in higher education. Many courses and assignments require the use of digital technologies, such as email, video conferencing, and online collaboration tools. Students who lack ICT skills may struggle to navigate these technologies, which can impede their ability to communicate effectively with their peers and instructors.

On the other hand, although research has shown that ICT competency can have a positive impact on academic performance (Lee and Kim, 2018), there are also concerns that over-reliance on ICT can have a negative impact on communication skills. For example, students who rely heavily on digital technologies may struggle with face-to- face communication or may have difficulty expressing themselves effectively in writing. Language proficiency and ICT competency are important factors to consider when developing and assessing communication skills in higher education. Educators and institutions should provide support and resources to help students improve their language proficiency and develop their ICT skills, while also encouraging a balance between digital and face-to- face communication. It is important for universities to provide support and resources to help students develop their ICT skills while also encouraging a balance between digital and face-to-face communication. This can include offering training on digital tools, providing access to technology resources, and promoting opportunities for in- person communication and collaboration. By doing so, universities can help students develop the skills they need to communicate effectively in a variety of contexts, both online and offline.

3.2 Communication Skills Approach To Non-Scientific Audience

Research has shown that a communication skills approach is effective when communicating scientific information to non-scientific audiences. Effective science communication is critical for promoting public understanding of science and increasing scientific literacy (National Academies of Sciences, Engineering, and Medicine, 2017). However, previous studies demonstrated that there was little curriculum devoted to good science communication among university students. This is a common issue observed in higher education, where there is often a lack of emphasis on science communication skills in the curriculum. Students were observed not having enough opportunities to learn about communicating their scientific thoughts and conclusions using simple and clear language with little scientific jargon. Higher education also provided few opportunities to develop excellent science communication in the existing courses. Therefore, it is important for higher education institutions to prioritize the development of science communication skills in their curriculum. With today's technological breakthroughs, it was deemed necessary for various professions to be able to communicate complicated ideas in a manner that is easily comprehended by all types of audiences. According to Ponzio et al. (2018), PhD students who took a course on explaining science had excellent results. They learned to be attentive listeners and impartial evaluators of their classmates. Students with multidisciplinary backgrounds and non-scientist peers improved their communication abilities regarding their work and why it is significant to those outside their area. This outcome was seen as beneficial preparation for their next career step (Ponzio et al., 2018). Accordingly, studies in this area have outlines several suggestions on communication skills approach to non- scientific audience, such as the following:

- Utilization of clear and simple language: Studies have found that using clear and simple language is critical when communicating scientific information to non-scientific audiences. In one study, researchers found that participants were more likely to understand and retain information when it was presented in plain language rather than technical jargon (Kelp, et al., 2023; Brossard, Lewenstein & Bonney, 2005)
- Enhancing understanding using visual aids, such as diagrams, videos, and infographics, can be effective in communicating complex scientific information to non-scientific audiences. Research has shown that visual aids can improve understanding and retention of scientific information (Ashayer & Igyuye, 2013; King, 2018).
- Tailor the message to the audience: Studies have found that adapting the message to the audience's interests and level of scientific knowledge is important when communicating scientific information to non- scientific audiences. In one study, researchers found that participants were more engaged and interested in the message when it was presented in a way that was relevant to their lives (Brossard, Lewenstein & Bonney, 2005).
- Engaging audience with stories and examples: Research has shown that using stories and examples can help engage non-scientific audiences and make the message more memorable. In one study, participants were more likely to remember scientific information when it was presented in a narrative form rather than a straightforward, factual manner (Ratcliff & Sun, 2020; Kaplan & Dahlstrom, 2017; Moon, 2010).

3.3 Blended Assessment And Feedback Communication

Blended assessment and feedback communication can be an effective approach for assessing communication skills in higher education. Blended assessment combines both formative and summative assessment methods, while feedback communication provides constructive feedback to students, helping them to identify areas for improvement and build their skills. Instructors can utilize a variety of assessment methods, such as group presentations, debates, and written assignments, to evaluate students' communication skills. These assessments should be designed to measure a range of communication skills, including verbal and nonverbal communication, listening skills, and critical thinking. In addition to traditional assessments, instructors can incorporate technology- based tools to facilitate blended assessment. For example, instructors can use video conferencing software to observe and assess students' communication skills during group presentations, or they can use online discussion forums to evaluate students' written communication skills. To provide feedback, instructors can use a variety of methods, such as one-on-one conferences, written feedback, and peer review. Feedback should be timely, specific, and focused on both strengths and areas for improvement. Instructors should also encourage students to reflect on their own communication skills and provide opportunities for self-assessment. It is considered that the style of communication influences assessment and feedback delivery (Borup et al., 2015).

The combination of objective structured self-assessment and peer-feedback (OSSP) during role-playing as doctor-patients was reported by Perera, Mohamadou, and Kaur (2010) as an effective learning strategy for enhancing communication skills. Acceptability and impression were high when students were directly involved in providing evaluative feedback for themselves and their peers. Nikolic, Stirling, and Ros (2018) found that self-assessment and self-assessment supplemented with peer input did not significantly outperform the traditional method. However, the authors emphasize that formative models such as recorded video, self-assessment, peer assessment, and reflective feedback aid in enhancing the presentation abilities of students (Nikolic, Stirling & Ros, 2018). In a study of bioengineering students in the United States, researchers discovered that employing calibrated peer review (CPR) intervention in the technical poster assignment improved students' ability to create high-quality graphs and tables that represent experimental data. The critiques and feedback received through CPR: three peer-evaluations of the draught, one self-assessment of the draught, one instructor evaluation of the draught, and final instructor evaluation had helped the students in task practice and collaborative learning (Saterbak, Moturu & Volz, 2017). As a result, CPR is recommended in the future to improve engineering students' visual communication skills. Instructors/lecturers must provide appropriate feedback in order to fulfil three major elements: (1) substance and utility; (2) time and efficiency; and (3) delivery and affective support. Borup et al. (2015) described these elements in their study of blended courses. There was no significant difference in opinions of feedback quality and delivery between students who received video feedback and those who received text input, according to the study.

According to the examination of actual feedback, the majority of students and instructors thought that text feedback was considerably more efficient, specific, and organized than video feedback, which was only visible as a longer, supporting, and informal sort of contact. Nonetheless, video feedback is thought to reduce misinterpretations when compared to written feedback, which lacks nonverbal cues and context description (Borup, et al., 2015). However, recent changes in higher education have hampered teachers' ability to deliver tailored feedback to students. Human feedback from the instructor/lecturer appears to be more difficult in a large and virtual class, as well as when personal interaction between the instructor and the students is limited. Harris et al. (2016) explained the differences in attitudes among 124 university students and 131 teachers in online oral communication learning (OOCL) in their surveys. When compared to the teachers, the majority of students had greater levels of technology self-efficacy, perceived usefulness of technology, and more positive attitudes toward OOCL. Harris et al., (2016) proposed a follow-up study to improve the instructors' attitudes, skills, and intrinsic interest in OOCL.

It is critical that students obtain feedback from their instructors/lecturers. This is an important component of formal learning that students must have in order to receive enough advise, support, and encouragement in their work (Borup, et al., 2015). However, in a study of narrative assessment feedback for pharmacy students, 77% of feedback provided by assessors was written without the use of politeness tactics, and 22% were hedged, particularly toward the poor performers' comments (Wilby et al., 2019). This study proposed that an overarching guideline and "assessment thesaurus" for describing key performance scopes and structures be developed in order to be standardized and professional. Blended assessment and feedback communication can be a powerful tool for assessing and developing

students' communication skills in higher education. By combining multiple assessment methods and providing constructive feedback, instructors can help students build their communication skills and succeed in their academic and professional pursuits.

3.4 Use Of Explicit And Direct Teaching Assessment

Explicit and direct teaching assessment can be an effective approach for assessing communication skills. This approach involves providing students with clear instructions, examples, and guidance on how to develop their communication skills, and then assessing their progress through structured assessments. In assessing student communication performance skills, it is very important for the department program to setting up goals and objectives to define and tested the applicable student performance criteria and scoring rubric. Assessment in this approach involves structured assessments that measure specific communication skills. For example, instructors may assess students' ability to present a clear and concise argument, use appropriate body language and eye contact, and respond to questions effectively. Assessments may also include written assignments that require students to demonstrate their ability to write clearly and effectively. Othman and Awang (2010) explained the rubric reliability test with inter-rater scores in final year project (FYP) of electrical engineering students. The study found that majority of students had an average or moderate ability in oral presentation of their project in all four constructs: content, delivery using slides, delivery style of the speaker and delivery to keep the audience attention. The high degree of internal consistency and high degree of inter-rater reliability of this workforce presentation rubric had proven the benefits of explicit direct assessment to assess student oral skills and other outcomes (Othman & Awang, 2010). One of the advantages of explicit and direct teaching assessment is that it provides students with clear expectations and guidance on how to develop their communication skills. This approach can also help instructors identify specific areas where students may be struggling and provide targeted feedback to support improvement. This may also extend to other courses and different groups of students especially for those involved in project and laboratory work.

Mercer-Mapstone and Kuchel (2016) stated that explicit teaching and direct training of science communication skills in their study was thought to improve science students' perspectives and performance, as well as their esteem in presenting science as a whole. This study's "template package" contained instructional design approaches such as slides, notes, instruction, and worksheets. Audience, language, content, context, style, prior knowledge, and goal of delivery were the seven key communication abilities evaluated. This activity is also recommended for use in a broader variety and number of disciplines, courses, year levels, class sizes, and universities (Mercer-Mapstone & Kuchel, 2016). However, one potential limitation of this approach is that it may not capture the full range of communication skills that students may need in real-world settings. Communication skills are often context-dependent and may require flexibility and adaptability. Therefore, instructors should also consider incorporating other assessment approaches, such as authentic assessments, to provide a more comprehensive evaluation of students' communication skills.

3.5 Increase Critical Thinking And Opportunity For Justifying Scientific Ideas

Nowadays, the demands of the workplace in the new industrial and technology revolutions have shifted. The priorities of university to produce graduates who are more flexible, tough, and confident equipped with effective communication in term of team working, time managing and critical thinking in their specialties. Recent quantitative efforts done by Stevens, Mills & Kuchel (2019) among science discipline undergraduates in five Australian universities had revealed about 65% of students were asked to present results; 31 % explained their ideas and only 4% of them were asked about the significance of ideas and were given opportunity to critically think. This very small percent of finding should not be under looked. Students should be given ample opportunities to justify their significance of scientific ideas (Stevens, Mills & Kuchel, 2019). In Australia national level of learning outcomes for science, mentioned that university science graduates will only be effective communicators when they are able to communicate on scientific results, information, or arguments to a variety of audiences, for a variety of purposes, and using a multiplicity of modes. To be noted, those Australian Science students were also more favored traditional written assignment than traditional oral presentations and traditional visual formats (i.e posters, websites, video and podcasts) to present their results from scientific analysis (Stevens, Mills & Kuchel, 2019). In a study aimed to analyses electrical engineering students' communication skills during poster presentation, the trend of mean mark from industry evaluators were lower than their external lecturers (Kamal et al., 2016).

Both aspect of assessments: 1) poster layout and design; and 2) delivery, had shown majority of students scored 4-5 out of 10 scale. In which indicating "clear voice but less fluent, moderate body language and less confident" during delivery and "readable but less creative and attractive" for poster layout and design (Kamal et al., 2016). Despite the overall communication skills evaluation that was claimed as "good", the trend of communication skills assessment from industry evaluator should be highlighted. This study is believed the evaluators expected of more presentable posters and delivery of more critical and scientific ideas with professional manners. It is an important to expose the students with real-life stimulation assessment in order to improve communication skills. It was agreed by Saaranen et al. (2015) that found stimulation exercises as a high-level category of learning. It may develop communication competency among health sciences master's level students. However, it might need higher cost of timing from lecturers and instructors to supervise the student's learning throughout stimulation exercises in order for the student to learn and be more scientific. Meanwhile in Ponzio et al. (2018) intervention study among PhD students in New Jersey, revealed that science communication skills could be learnt by using improvisation techniques, video recording and real-life stimulations. The diversity of scientific backgrounds among the class students had proved to enhance their ability to communicate their science to others outside their disciplines (Ponzio et al., 2018). This will surely improve skills in the students' scientific justifications, audience engagements, and nonverbal communication with the multi-background listeners.

3.6 Benefit Of Early And Continuous Communication Task

Early and continuous communication tasks can be beneficial for assessing communication skills in higher education. This approach involves incorporating communication tasks into the curriculum from the beginning of the course and continuing to provide opportunities for students to practice and develop their communication skills throughout the course. One benefit of early and continuous communication tasks is that they can help students build their confidence and competence in communication. By providing opportunities for students to practice and receive feedback on their communication skills early on, they can develop their skills and feel more comfortable communicating in academic and professional settings. From the Table 1, it is noticeably found that majority of communication skills assessment studies were focused among third and final year students instead of junior level students (Kamal et al., 2016; Said, Mahamod & Alias, 2013; Othman & Awang, 2010; Yeap, 2008; Wilby et al., 2019; Nikolic, Stirling & Ros, 2018; & Mercer-Mapstone & Kuchel, 2016). Only two studies were done in first- and second-year undergraduate students (Stevens, Mills & Kuchel, 2019 & Perera, Mohamadou & Kaur, 2010). This study suggested that communication task in a continuous assessment should be start as early as semester one of undergraduates' courses. This is not only for early adaptation to professionalism but also for generic skills development. Regardless of discipline area, the tasks should strengthen all type of communication skills across the pedagogy and curriculum.

Harper & Vered (2016) explained in their recent report, writing across curriculum (WAC) and writing in the discipline (WID) among the student should be implemented systematically and as a whole-of-institution approach. These strategies had robustly developed particularly in US and UK higher educations (Harper & Vered, 2016). Basic principles of WAC/WID were 1) writing is the responsibility of the entire academic community; 2) writing must be integrated across departmental boundaries; 3) writing instruction must be continuous during all four years of undergraduate education; 4) writing promotes learning.; and 5) only by practicing the conventions of an academic discipline will students begin to communicate effectively within their discipline (Harper & Vered, 2016). By empowering writing skills in academic since early year of undergraduate, it will stimulate the students thinking and able to communicate the outcomes and knowledge of their disciplines with broader ways. Students who are early recognised as having difficulties with writing or speaking in English may be extended to language classes for "fixing" and "upgrading" (Stenvenson & Kokkinn, 2007). This is also in line with a theory of communication skills model (CSM) that conceptualized in an action research study among Australian and Portuguese higher education. The study agreed a continuous assessment of communication in term of critical thinking, debating, information searching, reading, research working, technology, writing and written presentation/oral skills among junior undergraduates (Isaias & Issa, 2014). In addition, early and continuous communication tasks can provide instructors with ongoing feedback on students' communication skills, allowing them to identify areas for improvement and provide targeted support. This can be especially useful for students who may be struggling with communication but may not be aware of it. Moreover, early and continuous communication tasks can also help students develop skills that are transferable to other contexts. Effective communication skills are essential in many professions, and the ability to communicate clearly and effectively can enhance students' employability.

■4.0 CONCLUSION

Assessing communication skills in higher education, especially in multi-disciplinary studies, is crucial for preparing students for the complex demands of the modern workforce. There are various assessments and methods employed to evaluate communication skills in higher education, and these can vary depending on the institution and the specific program. Regardless the area of disciplines, this study provided a snapshot on issues regarding communication skills assessments used in higher education in the worldwide. The analysis demonstrates the existence of issues from the aspects of audience, mode and purpose of the assessments which mainly are (1) impact of language proficiency and ICT competency; (2) communication skills approach to non-scientific audience; (3) blended assessment and feedback communication; (4) use of explicit and direct teaching assessment; (5) critical thinking and opportunity for justifying scientific ideas; and (6) benefit of early and continuous communication task. In general, the main suggestions for the future studies are as follows:

- There seems to be a gap in assessment related to higher-order thinking and problem-solving abilities in junior students. It would therefore be advisable to provide more and continuous opportunity to present their knowledge, understanding and thinking in different modes of communication (e.g., manuscript writing, reflection, debate, and analogue task) for different scenarios. This may disclose the reality and progress of what students know and think.
- Due to the importance of excellent communication in professional practice, more courses and participation in community programs should be promoted throughout the curriculum.
- Greater emphasis should be made on the mode of feedback and evaluation delivery. Self-evaluation with video or audio instructor comments appears to be successful and helpful feedback delivery that will maximize the students' learning and motivation. The standard feedback "thesaurus" should also include terms for addressing literate courtesy and sensitivity.

We believe that this current meta-analysis may be great interest to university policy makers, language lecturers and disciplinary academic lecturers involved in searching the best construct and assessment to evaluate students' communication skills.

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Appendix

Table 1. Protocol for meta-analysis

Review question	(1) What are the communication skill assessments employed in local and global multi-disciplines study of higher education? (2) What are the "key finding" contributing to the issues of communication skills assessment in higher education students?
Searches	• Online databases were used to search pertinent published articles related to communication skills assessments and rubrics development in the higher education. • The web-based service provider was Scopus, Web of Science, Wiley Online Library, Taylor & Francis Online and Springerlink. • Additional information of relevant studies was searched using Google Scholar. • All the articles were scanned to retrieve the related studies on "communication skills assessment in higher education". Since there has been limited research when term of "higher education" was used, a term "university" was replaced. • Research focusing on those assessments were rather assorted, specific keywords terms were used such as "communication skills", "communication", "universities", "graduate student" and "higher education".
Types of study to be included	• Published articles related to communication skills assessments and rubrics development in the higher education. • During the initial stage, there was no limitation on searching relevant studies, all concept papers, research papers, conference proceedings and books.
Condition or domain being studied/ Context	• Communication skills assessments and rubrics development in the higher education.
Participants/population	• Participants in studies are the higher educational institutions and/ or universities
Intervention(s), exposure(s)	• Not applicable to the study
Main outcome(s)	• Communication skills assessments and rubrics development in the higher education.
Additional outcome(s)	• Key findings related to issues in communication skills assessments and rubrics development in the higher education.
Data extraction (selection and coding)	Two researchers involved in data extraction for the study and checked by a co-author Zainudin Abu Bakar, who will have no direct involvement in the current review. Further data extracted only for this review will be checked for consistency by Nurul Ain Saipudin (co author on this review). Discrepancies will be resolved via discussion. Data will be extracted to sheets developed for the previous review.

Table 2. Analysis on assessment used to evaluate communication skills in higher education (Malaysia and worldwide).

No	Authors	Study Design	Location	Subject	Discipline	Type	Assessment Tool / Construct
1.	Sarwari et al. (2018)	Mixed method	Universiti Malaysia Pahang (UMP), Malaysia	N= 130 students from 18 different countries	General (postgraduates)	Inter-personal	The Interpersonal Competence Questionnaire (ICQ) (initiation, disclosure, emotional support, negative assertion, and conflict management)
2.	Sarwari & Abdul Wahab (2017)	Mixed-method	Universiti Malaysia Pahang (UMP), Pahang, Malaysia	N=108 international students	General (postgraduates)	Inter-cultural	-The Intercultural Sensitivity Scale (ISS) (engagement, confidence, cultural differences, enjoyment, and attentiveness) & The Intercultural Communication Competence Questionnaire (ICCQ) (interpersonal skills, team effectiveness, cultural uncertainty, & cultural empathy)
3.	Sarwari, Ibrahim & Nor Ashikin (2016)	Embedded design of mixed method	Universiti Malaysia Pahang (UMP), Malaysia	N=220 participants (n=110 local & n=110 international students)	General (postgraduate)	Inter-personal	-Questionnaire & 12 open ended interview questions focused on the ELP level and its effects on their daily interpersonal interactions.
4.	Kamal et al. (2016)	Quantitative	Universiti Kebangsaan Malaysia (UKM), Bangi Selangor, Malaysia	N=109 final year students (n=51 batch 2014 & n= 58 from batch 2015) -4 external lecturers and 4 industry	Electrical, Electronic and Systems Engineering (undergraduates)	Written, verbal	-Poster layout and design (readable, creative, attractive & professional) -delivery (clarity, fluency, body language & confidence) *Rubric is divided into 5 rating scales, namely 0, 1-3, 4-5, 6-7, and 8-10

				representatives			
5.	Said, Mohamod & Alias (2013)	Quantitative	UKM, Bangi, Selangor, Malaysia	N=127 (3rd years trainee teachers (n=77 from PU & n=50 TTI	Education in Malay Language (undergraduates)	Oral, written, interpersonal	Malaysian Generic Skills Inventory (MyGSi) questionnaire (nonverbal, listening, present idea verbally & written form, delivery, negotiate, interact & summarize)
6.	Othman & Awang (2010)	Quantitative	Universiti Teknologi Malaysia (UTM), Johor, Malaysia	Rubric reliability test (n=31 students & 8 raters) & inter-rater scores (n=11 student & 16 raters)	Electrical Engineering (undergraduates)	Oral	Workforce presentation rubrics: content, delivery using slides, delivery style of the speaker & delivery - keeping audience attention -in Final Year Project II
7.	Perera, Mohamadou & Kaur (2010)	Case-blinded control	International Medical University (IMU), Kuala Lumpur, Malaysia	N=190 semester one medical students (n=97 experimental and n= 93 control group)	Medicine (BSc)	Oral	-Objective structured self-assessment and peer-feedback (OSSP) as learning tool/ Reflective log. (building rapport, listening, language, interview style, interview structure)
8.	Yeap, Beevi & Lukman (2008)	Quantitative	International Medical University (IMU), Kuala Lumpur, Malaysia	N= 128 pre-clinical medical students	Medicine (undergraduate)	Interpersonal	-Interpersonal Communication Inventory (ICI), Communication Skills Attitude Measures (CSAM), Communication Skills Video Assessment (CSVA), Communication Skills Training Evaluation (COSTE)
9.	Stevens, Mills & Kuchel (2019)	Quantitative	5 Australian Universities	N= 683 semester 1 & 2 students	Science (undergraduate)	Oral, written, interpersonal	Summative assessments categories: 1. communication tasks (essay, report, personal response, reflection/journal, oral presentation, poster presentation, online symposium, website & annotated bibliography) 2. Examinations (mid-semester, final semester & take home) 3. other (quiz-paper/online, worksheet/problem set, practical/field skills, assignment, project, portfolio, biological collection & drawing/map)
10.	Wilby et al. (2019)	Qualitative	College of Pharmacy at Qatar University	18 assessors and 14 students completing Objective Structured Clinical Examinations (OSCE)	Bachelor of Science in Pharmacy and Doctor of Pharmacy	Oral, written, interpersonal	-2 OSCE cycles (9 communication stations) 4 constructs of narrative evaluations on communication skills: confidence, adaptability, patient safety & professionalism -communication assessment scale (overall performance)
11.	Ponziowt al. (2018)	Qualitative and quantitative	Rutgers University, New Brunswick, New Jersey	12 faculty members and guest speakers (Capstone mentors) with 17 students -15 communication science classes)	Science (PhD) -biology, chemistry & engineering, pharmaceutical, psychology	Oral, written, interpersonal, video	Assessment: homework assignment-manuscript abstracts and introductions, posters for scientific meetings, PowerPoint slide decks, 30-second elevator pitches -Rubric modified from Rutgers School of Communication: evaluation of the opening statement, organization and content, audience consideration, vocal expression, nonverbal communication, and conclusion
12.	Nikolic, Stirling & Ros (2018)	Quasi-experimental design	University of Wollongong, New South Wales, Australia	Final-year engineering thesis course prepares for final presentation (G1=72: only presentation; G2=84: all activities; & G3=17: no peer & assessment & feedback)	Electrical, Computer and Telecommunications Engineering (undergraduate)	Oral	-Non-graded formative assessment approach using 1. YouTube video 2. Self- and peer assessment 3. Peer assessment feedback and feedback received & presentation - Rubric competency *presentation style & oral delivery 25% technical content 50% & resources, diagrams and other aid 25%)*
13.	Saterbak, Moturu & Volz (2017)	Pedagogical Interventions (active learning)	Rice University's, Houstan, Texas, USA	N=105 posters collected from 2007-2012 in Bioengineering department, Tissue Culture	Bioengineering (undergraduates)	Written, oral & Visual	-Teaching intervention by using Calibrated Peer Review™ (CPR)→14 statements → 3 peer-evaluations of the draft, 1 self-evaluation of the draft, 1 instructor evaluation of the draft, 1 instructor evaluation of the final. -credits for critiques, grading by instructor

				Laboratory (in technical poster assignment)			
14.	Romero-Martín et al., 2017	Quantitative survey	24 Spanish universities	1,243 students, 487 graduates and 345 lecturers	Education	Oral, written, inter-personal	Questionnaire → teaching competency on ITE (in paper/ electronic format) Likert scale -12 questions and 79 separate items regarding teaching competence & competences in the area of ICT.
15.	Harris et al. (2016)	Two anonymous online surveys	Regional Australian university	N=255 participants (n=124 undergraduates and postgraduate students & n= 131 instructors) components	10 courses with online oral communication learning (OOCL)	Online oral	Questionnaire -Student OOCL Attitudes (perceived usefulness, self-efficacy in using technology, behavioral intentions, and learned efficacy) -Instructor OOCL Attitudes (PU, self- efficacy in working with OOCTs, perceived ease of use, intrinsic interest, and behavioral intentions.)
16.	Mercer-Mapstone & Kuchel (2016)	Mixed method	University of Queensland, Australia	N=294 (2nd & 3rd-year undergraduate science students)	Science -Biology, physics & chemistry degree	Oral, written, inter-personal	Effective science communication activities "package" explicit teaching and learning packages – slides, notes, instruction & worksheet -Student learning survey: 1. Student perceptions & Self-reported learning gains (level of engagement, learning gains & self-efficacy) 2. Student performance scale; 3. Academic's perception
17.	Harper & Vered (2016)	Concept paper	Australian universities	Writing Across the Curriculum (WAC) & Writing Inside the Disciplines (WID)	All	Written	-WAC and WID discussed and established, whole-of-institution models for curriculum, pedagogy and student services that are well-suited to the Australian context, & guide new approaches to developing student communication.
18.	Johnson, Veitch & Dewiyanti (2015)	A design-based research approach	Murdoch University, Australia	Communication Skill Framework	All	Oral, written, reading & inter-personal	1.Murdoch Communication Skills Framework 2. Preliminary design principles project (to embed the teaching, learning and assessment of communication skills in higher education)
19.	Saaranen et al. (2015)	Qualitative, descriptive research method	University of Eastern Finland	N=47 master-level students of 3 specialties taking the Challenging Situations in Speech Communication course	Nursing Science (Master)	Inter-personal	Simulation exercises imitates real-life situations and makes genuine phenomena (high-level categories: planning of teaching, carrying out the different stages of the simulation exercise, participant roles, and students' personal factors)
20.	Borup, et al. (2015)	Complementary mixed-methods experimental	USA	N=180 (n=105 EG; n=75 CG) final semester student.	Education (technology integration course degree)	Video, audio	Feedback Environment Scale (student perception on feedback quality & delivery) 1. Scaled survey questions (compare feedback quality of video & text feedback) 2. Content analysis of instructor comments (difference in feedback content received by text & asynchronous video) 3.Interview (perception for video vs text feedback -Blended courses
21.	Isaias & Issa (2014)	Action research study	Perth, Australia & Portugal	N=126	Information Systems (IS) postgraduate units in Australia and Portugal	Oral, written, inter-personal	-Reflective journal, -business plan & prototype, -discussion forum, -presentation, and –final exam -A Communication skills model (CSM) –theory -critical thinking, debate, information, reading, research, technology, writing, written presentation/oral skills