論文の英文要旨	
論文題目	Development and Validation of CAN-DO Descriptors for Students Majoring in Engineering in Japanese Higher Education Institutions
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This dissertation examines the development and validation of CAN-DO descriptors tailored for engineering students in Japanese higher education institutions. By focusing on tasks relevant to engineering students based on needs analyses, the developed CAN-DO descriptors seek to bridge the gap between classroom-based English proficiency frameworks and assessments and the real-world communication needs of engineering students. This study also aims to validate the developed CAN-DO descriptors using the Rasch measurement to ensure their reliability and plausibility in distinguishing students' proficiency levels, based on the interpretive argument of validation.

Needs analysis studies for engineering students in Japanese higher education institutions consist of three needs analysis studies (NAS). The first two studies (NAS 1, and NAS 2) are aimed at finding out what they did using English in overseas internships and research stays based on an empirical approach by using questionnaires to participants majoring in engineering. The third one (NAS 3) is aimed at examining in what tasks they used English in their school lives outside of English classes.

For NAS 1, which is a pilot study, five engineering students were involved in the study. As for NAS 2, 38 engineering students participated in it. The questionnaires used had three parts to capture what engineering students did during internships and research stays in foreign countries: tasks at workplace or laboratory, tasks during break, and tasks after work or school and during weekend. Participants were asked to list the tasks that they had done on each occasion above, to report the language(s) used in accomplishing the task and the ratio of the use of each language, and to self-assess their performance in terms of achievement level of the task. In case participants could not accomplish the task successfully, they had to give a main reason why the task was not accomplished successfully from three options: lack of language skills, lack of

technical knowledge, and communication problems. As for analyzing the data collected in the first two needs analysis studies, a text mining approach was conducted to count the frequency of the words shown in the tasks to find out what tasks were done frequently by the participants.

As for the needs analysis for engineering students' daily academic needs in their school lives, NAS 3 was conducted. A questionnaire was made and participants in an advanced course in a technical college joined the study. The data collected was accumulated from the three studies of needs analysis among engineering students. Then, the tasks that engineering students had to accomplish are listed in four skills/ five domains respectively, to prepare for development of CAN-DO descriptors.

Utilizing the lists of the tasks that engineering students frequently deal with in international, and academic contexts derived from the empirical needs analyses, and the specifications including English proficiency level of the targeting engineering students, in total, 173 CAN-DO descriptors were developed in four skills/ five domains. The developed CAN-DO descriptors consist of 36 for listening, 32 for reading, 36 for writing, 31 for spoken production, and 38 for spoken interaction. The ones in listening and reading skills were developed through collaborative research with the Institute for International Business Communication. Other CAN-DO descriptors for productive skills were developed by the author utilizing existing CAN-DO descriptors, such as the Global Scale of English for Academic English and for Professional English by Pearson PLC (2016), "CEFR Descriptors (Searchable)" (2020) and unpublished CAN-DO descriptors by the Institute for International Business Communication.

Lastly, the validation study was conducted to evaluate the reliability and effectiveness of the developed CAN-DO descriptors, involving 1,990 engineering students across technical colleges, universities, and graduate schools in Japan. The participants self-assessed their English proficiency using the list of CAN-DO descriptors developed in the study. The procedure of the validation study was borrowed from the validation study in an argument-based validation approach shown in Chapelle et al. (2008) and Chapelle and Lee (2021). The study employed the Rasch model to examine the descriptors' psychometric properties, confirming their unidimensionality, internal consistency, and reliability.

The results suggest that the descriptors effectively distinguish students at different levels of English proficiency, supporting their validity as an assessment tool. Many of the developed CAN-DO descriptors could be matched with the CEFR levels, although some could not be matched well due to participants' lack of prior exposure to the tasks, and lack of information in the developed descriptors such as conditions and criteria. The moderate positive correlations observed between the students' self-assessments using the descriptors and their performance on the standardized tests, the scores in the TOEIC® tests in listening, reading, writing, and speaking sections confirmed the effectiveness of the descriptors. This suggests that the developed CAN-DO descriptors can serve not only as a tool for self-assessment but also for predicting the results of standardized tests, making them a valuable resource in the educational and professional context.

The following are selected pedagogical implications derived from the research in the dissertation. First, to align the developed CAN-DO descriptors with the CEFR, it is significant to include detailed conditions and criteria for each descriptor at the development stage. The conditions define the context in which a task should be performed, while the criteria define the expected outcomes. By clearly stating these components in the descriptors, teachers or researchers can ensure that the descriptors accurately indicate performance expectations at each CEFR level.

Second, to improve alignment with the CEFR levels, anchor items should also be defined for each proficiency level. Anchor items serve as reference points and ensure that the descriptors are comparable and consistent across different language levels. This systematic alignment with the CEFR increases the validity and reliability of the descriptors and facilitates their integration into broader language education frameworks.

Third, if the descriptors are to be used primarily as part of a portfolio and not just for validation purposes, retaining the most basic descriptors, including those identified as Pre-A1 level in the current validation study is important. Retaining these descriptors ensures that students, particularly those at the lower end of the proficiency scale, such as first-year students at a technical college. Including descriptors reflecting these initial proficiency levels will prevent students from feeling excluded from the CAN-DO list, especially if they struggle to master even the basic A1-level tasks. By allowing students to achieve success at lower levels, English teachers can promote

confidence, self-efficacy and motivation to learn and use the language, ultimately supporting a more positive and sustainable learning experience.