

## **Toward the New Concept of Needs Analysis: English for Medical Professionals in Japan**

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This paper is a preliminary study to conduct a needs analysis of medical doctors to explore what is needed in English education in medical schools. In the dissertation, succeeding after this paper, a multidimensional needs analysis will be introduced as a way to present the new concept of needs analysis that will be break away from the conventional needs analysis. The data will be collected from interviews, participants' observations, e-mail exchanges, and questionnaires, which will be investigated by adopting several models to discover the needs of doctors who work in the medical field and students who want to become medical experts. This preliminary study is also intended to categorize a study of English for Medical Purposes (EMP) in the field of English for Specific Purposes (ESP) in order to direct its attention to the needs of medical doctors and to develop a curriculum for English in the Faculty of Medicine. This paper will introduce some previous research on conventional needs analysis and look at how previous researchers conceptualized and classified needs analysis in the past. Since each researcher's viewpoint is different, this paper will critically compare the classification of previous researcher's perspectives and indicate which viewpoint will be adopted in the succeeding multidimensional needs analysis. This paper will clarify which stance should be applied to EMP as well as broader academic settings such as law, economics, mathematics and engineering as a study of ESP.

**Keywords:** Needs Analysis, Discourse Analysis, English for Medical Purposes, English for Specific Purposes

### **1. Introduction**

As with the progress of globalization around the world, medical professionals such as doctors, nurses, and hospital staff are required to respond to internationalization in various situations. On the other hand, because English qualification tests such as TOEFL and TOEIC examination are required as an indicator to prove their ability in medical department of some universities, English instructors are also advised to teach for the class for the preparation for examinations. The researcher of this current study works at Juntendo University, one of the most prestigious medical schools in Japan. After more than 10 years of working as a specialist of preparation of English qualification tests, since graduated from TESOL M.A. in 2008, the researcher found that TOEFL does not necessarily match the future objectives of medical students and healthcare professionals. Since students study as hard as they can to meet the expectations of the universities, it is necessary to think about whether the university's requirements are completely helpful for the construction of communication skills that will help medical students become medical professionals.

This research will be a study of English for Medical Purposes (EMP) and it will explore what is needed for English education in medical schools for the students to become medical doctors to use English skills efficiently. The dissertation after this will also aim at developing a curriculum of the medical department based on the result. After developing a curriculum for English in the Faculty of Medicine by interviewing and observing doctors who work in the medical field and students who want to become medical experts, the needs analysis conducted in this study will be applied for broader academic settings in some other department, such as law, economics, mathematics and engineering as a study of English for Specific Purposes (ESP).

## 2. Background

Communication in hospitals will ascertain life or death; albeit doctors can assess the situation from symptoms or with the use of automated medical equipment, only patients can communicate their response to tests, medications, and any other concerns they may have which can affect treatment altogether. Sometimes the doctor's inefficiency for meaningful communication causes problems because communication becomes much more complex and convoluted when either or both interlocutors do not speak a shared lingua franca well. (Small 2019). Japanese medical trainees should think about components of discourse in English with foreign patients because medical doctors should be confident that they can communicate well enough in English to achieve shared goals of medical discourse with a patient who lacks Japanese language proficiency. (Small 2019). In addition to doctors' communication with patients, the current research will also focus on doctor's communication with their colleagues both in their daily works and academic conferences.

## 3. Literature review

### 3.1 Why Needs Analysis?

The study is an attempt to conduct needs analysis to find out what should be included in curriculums for English education in medical schools. What makes the series of research innovative is that it captures the scope of needs analysis in a broad way. In the dissertation succeeding after this, needs analysis includes the concept of Literacy, Identity and Cognition; it comprises not just linguistic ability such as English grammar, vocabulary, and knowledge, but also how to act, how to speak, and how to face it.

In a broad sense, a needs analysis is critical when people are looking at the development of learning content and validating the time spent in creating a program. Sometimes the biggest mistake educational leaders make is to think that learning can fix everything. (Paltridge, 2012). If teachers or instructional designers see the students are not performing as well as they need the students to do, the teachers and instructional designers would think that is because students need more training. They would build a course without confirming its effectiveness. When educational leaders or teachers decide or adopt the program someone simply recommends, or out of their mere intuition, it will lead to unintended consequences. In this study, I chose Needs Analysis because it is a process to address the performance issue and to determine needs in creating a course in the medical field in Japan. According to Paltridge (2012), when conducting needs analysis, researchers should determine the desired level of performance. Researchers should be clear about what they want the learners to do through various methods such as interviewing or working with the students. Moreover, we should know their current level. This can be observed by seeing what the learners do by looking at the data. After researchers have completed these two steps, they can see the difference between the two. (Paltridge, 2012). Thus, they should see how much of the performance gap exists. After that, to bridge the gap between the two, determining the cause of the performance gap is important. As Noda (2014) stated the importance of knowing the needs of the learners in medical education, understanding what the root cause of the performance issue is the purpose of the training and learning.

Needs analysis is imperative for people who measure the development of learning content. According to Richards & Schmidt, (2010), Needs Analysis is "the process of determining the needs for which a learner or group of learners requires a language and arranging the needs according to priorities." (Richards & Schmidt, 2010, p.389).

In organizational training settings, according to Leat and Lovell (1997), Mazhisham et. al. (2018), and Ford and Sinha (2008), the earliest and highly recommended most well-established method for identifying training needs is that of McGehee and Thayer (1961). His model has been an excessive influence on other successive models of the assessment, especially in the field of company training. McGehee and Thayer's (1961) framework outline three levels of the training needs assessment. It can be summarized in the following steps.

Needs analysis at the

A: Organization level: It allows the organizations to determine where training initiatives should best be directed for the company's aims.

B: Task level: To enhance support for companies and personal goals, this analysis is to assess the demands of each job role.

C: Personal level: How well a person fulfills the activities comprising the person's role to identify potential skills gaps at such tasks.

(McGehee and Thayer's 1961 p,25)

This model has separated the training needs in organizations into three levels. It can be applied in the current study to take the methods in the light of understanding the gap between the universities' needs and student's needs. However, in educational settings, education can take place at a number of different levels.

In educational settings, Brown (2005) elucidates the process by finding out the learning needs of the students as learning objectives that will act as the source of all decisions about the structure of the course. It is a process to address the performance issue and to know a program should be established. As Long (2005) stated, the resources are decreasing in the present era, and more significance is devoted to the attentive investigation of learners' needs as a requirement for efficient course design. However, part of the objective of this study is to see the gap between desired level and the performance level. I assumed that it is not only learners' needs that should be investigated but also the needs of medical doctors should be examined.

### **3.2 Whose Needs should be Analyzed?**

According to Noda (2014), in the field of language education, it is the mainstream to construct learning programs based on the structure of the language. However, needs analysis has started to be conducted. After that, in order to acquire practical language skills so that learners can play an active role as a member of a specialized field, it is necessary to focus on needs analysis as well as language analysis in the relevant field. According to Miyama (2000), needs analysis for ESP can be considered in three areas; 1) The needs of the society, 2) the needs of teachers and universities, and 3) the needs of learners. Depending on which area of the need's analysis study is made, the purpose of the study and the types of participants of the research also varies.

Concerning the needs of the society 1), it is necessary to know what areas the learners belong to in the current community, and what kind of field the University students will belong to in the future society. In the society, they should know what technical terms and grammatical structures they need to learn in order to communicate with other members of the society without difficulty, and what skills they still need to learn and set up the goals in the course. With the development of computer networks, the geographic distance that had separated members of the society a long time ago has virtually disappeared. Accordingly,

the role of English has never been more important. In this situation, the types of English that advanced learners must acquire include applying for participation in international conferences on the Internet, publishing papers in journals in their academic societies, and exchanging emails with overseas researchers.

Regarding the needs of teachers and universities, 2) there are two types of teachers, a provider-type teacher who appreciates passive learners, and a coordinator-type teacher who conducts learner-centered classes. The authors point out the teachers' main job is to support the process of learning by which students become self-reliant. In addition, when determining the course design of a university, it is important to consider what the administration of the university desires for the course and how it is situated in university education.

Lastly, about the needs of learners 3), given the current situation of the university English education, it can be said that many of the learners who do not have integrated motivation are very passive, and often do not have a clear picture of their own needs for learning English. By studying in a course designed based on needs analysis, such as to increase learners' motivation and devise learning styles and learning strategies, passive learners will be able to think about their specific language needs.

Again, the purpose of the series of study is to focus on 1) the needs of the discourse community. The current study partly aims to consider the gap between the nature of the discourse community to which medical doctors currently belong to, and the discourse community of which students will be members of in the future.

### **3.3 Needs Analysis and English for Specific Purposes (ESP)**

Needs and Needs Analysis have been key concepts in discussing ESP courses. Several authors have emphasized the dynamic position that needs analysis holds in syllabus design and curriculum development, particularly for ESP. Then, what is English for specific purposes (ESP)? Richards & Schmidt (2010) defined it as “the role of English in a language course or program of instruction in which the content and aims of the course are fixed by the specific needs of a particular group of learners”. With that definition, we understand that in knowing the needs of a particular group of learners, “Needs Analysis” is necessary. Hutchinson and Waters (1987) argued that ESP is a learner-centered approach which aims to meet the language needs of particular learners. The researchers (1987) got across the target language needs analysis process through three distinctive issues: (a) necessities (what is English needed for), (b) lacks (what learners do not know), refer to the gap between what the learners know already and what they need at the present time. (c) wants (that learners feel they need), refer to particular needs of the particular learners. (Hutchinson and Waters, 1987). Accordingly, Needs Analysis and ESP are intimately interlinked.

As Brown (2013) introduced, the topic of ESP often roughly subdivides ESP into two purposes; *English for academic purposes* (EAP) and *English for occupational purposes* (EOP). Figure 1 illustrates this division of ESP into EAP and EOP. Further, as shown in Figure 2, EAP can also be divided into third-level categories of English for Science and Technology, English for social sciences purposes, and English for humanities purposes. Accordingly, EOP can be divided into various categories like English for medical purposes, hotel purposes, construction purposes, and others. Even further, the third level categories can also be divided into the fourth level categories, for example, Science & Technology. (See Figure 3). The third-level category can be subdivided into the fourth-level category of

English for hard sciences, and engineering, with engineering further subdivided into civil, mechanical, electrical, chemical, aeronautical, and so on. (Brown 2013).

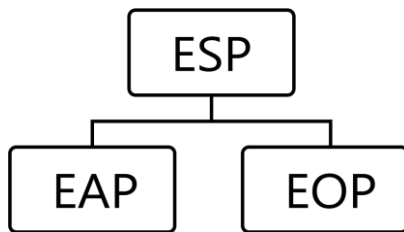


Figure 1. Two primary categories of ESP (Brown, 2013. p.7)

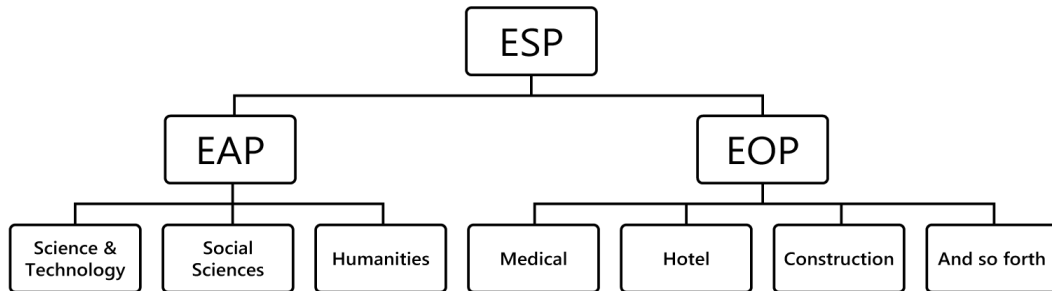


Figure 2. Third-level subcategories of ESP (Brown, 2013. p.7)

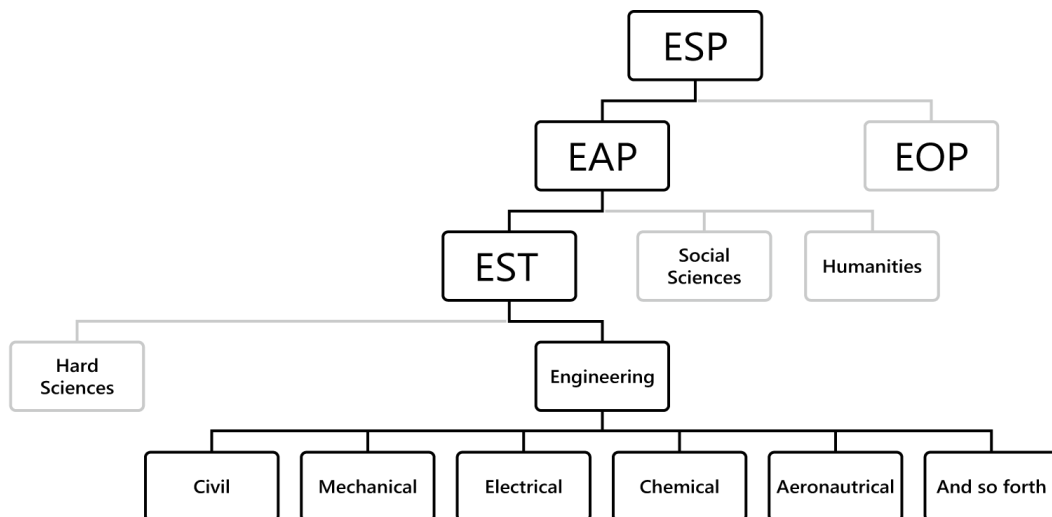


Figure 3. Further subdividing EST (Brown, 2013. p.8)

Now that we know each subcategory in the third subcategory is divided into the fourth level, the next question is: Are these sub-categories mutually exclusive? Although each subcategory in the fourth level has its own distinct rhetorical structure, organizational principles, and vocabulary items, in reality, it is more complicated because some of the characteristics of these subcategories may overlap with the other structures. If I put these subcategories of English in Medical Purposes (the third-level), they can be divided into doctors, nurses, emergency medical technicians, dentists, veterinarians, X-ray technicians, hospice care workers, counselors, and so forth. As Brown (2013) suggested, sometimes it is useful to think of the various English Purposes as distinct and different, while other times, especially in light of increasing interdisciplinarity in the academy, it is useful to think about how the English used to serve those different purposes may overlap with the English of other specific purposes. To apply this notion of sub-categories, everyone I know in my workplace belongs to or can be divided into deeper sub-categories. It is useful to think each individual

has their English purposes and at the same time, it is useful to think that each individual's purpose of English may overlap.

### **3.4 From ESP to EMP (English for Medical Purposes)**

Previously many researchers have devoted needs analysis from the viewpoint of language use. For example, Zohoorian (2015) surveyed the Iranian context of EAP for the students majoring in computer engineering as well as information technology. Even in the field of Needs Analysis for medical English, many researchers in several countries in various situations have contributed to the previous studies. English is a dominant language in medical accounts, which paves the way for emergence of an EMP (English for Medical Purposes) as a new branch of ESP. As Kayaoglu (2016) mentioned, without conducting a needs analysis process, using an EFL (English as a Foreign Language) context like Turkey since most of the medical English course books in use are mostly addressing the needs of students in an ESL (English as a Second Language) context.

Research in the Iranian context, again, Karimnia (2018) has investigated the medical students' English language learning needs and their perception of ESP courses in an academic environment of medical students in Iran. The team used a needs analysis questionnaire for data collection. The questionnaire was designed to identify the learners' perceptions of the frequency of English language skills use, the importance of English language learning, their ability in using language skills, their needs for language learning and their preference for an English language course. Vahdany (2016) has conducted a study on students and General Practitioners. The questionnaire for general practitioners was distributed in some hospitals and sent to the students in their dormitories. Results have shown that both medical students and General Practitioners valued reading skills higher than other language skills. However, speaking skills had the least significance for both groups. Besides the fact that reading skills are much more important in the medical field, Medicine students and Doctors require developing their English language proficiency in other skills as well to acquire a high level of English skills to be prepared for their professional future lives. The research figures showed that to completely meet the academic-related and job-related language needs of the students, more English language credits and longer class time are recommended to be given to the students of medicine.

Kayaoglu, a researcher who recognized the EMP (English for Medical Purposes) as one of the new branches in ESP, has done a questionnaire survey in 2016. With 47 items that cover five different parts focusing on medical students' purposes of learning English, the significance of learning English, their preference of learning environment, language learning needs of major language skills (reading, writing, speaking, listening) and their preference of assessment type. The questionnaire was administered to the students at the faculty of medicine and Karadeniz Technical University.

So far, I have introduced the importance of needs analysis and how language learning can be divided deeply into sub-categories and in the detailed categories there are some overlaps. Next, I will briefly look at the conventional needs analysis and explain how I will apply it to the multidimensional needs analysis for my future study.

## 4. Beyond the Conventional Needs Analysis

### 4.1 Conventional Needs Analysis

Students in medical Universities would not learn English if teachers only focus on conventional language skills. In this section, I will explore needs analysis, not just as a traditional linguistic skill but in a broader scope.

In the past, around the beginning of the 2000s, a lot of emphasis on the Needs Analysis has been put on the analysis of language use such as usage of grammar and vocabulary as Long (2005) had suggested. However, in his compiled book, Jasso-Aguilar (2005), proposed that there are quite a few things other than language that play a role as a professional worker, such as how to behave, and how to act, so people should be sensitive to what the other people want. This natural sensitivity is included as literacy. Then, she broadened the view of Needs Analysis to include the concept of Literacy. (Shown in Figure 4).

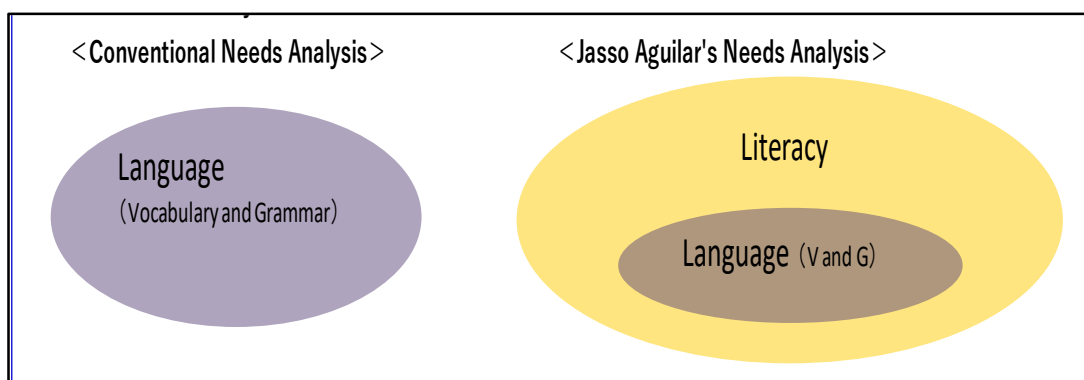


Figure 4. Conventional Needs Analysis

### 4.2 Toward the New Concept of Needs Analysis

Moreover, there are some needs that cannot be grasped only by literacy. For example, in an English classroom, understanding and learning the language is the aim of the English classes. However, to behave as a doctor, understanding and looking at the situation beyond the language is needed. This will lead to the concept of cognition in Time and Space. The purpose of the current study is to grasp and discuss the needs holistically, not in a narrow sense. In the past, various researchers have attempted to explore needs analysis linguistically. Even so, this traditional way of needs analysis would not cover the needs of general learners regardless of students in medical schools. Especially in medical universities, teaching only conventional English languages and ignoring the practical work of doctors, is not enough for living in the medical community where medical doctors are relatively and equally decent at using English. So, in this research, to see the Needs Analysis from broader perspectives is necessary.

Before indicating the broader perspective of needs analysis, I propose in the current research, the history of the various comprehensive needs analysis from the past and their relation to the current study should also be introduced. According to Brunton (2009), in debating about needs, he mentioned there are two approaches to the learner' needs: a narrow approach in which the focus is on the immediate needs of the learners with a designed course, and a broad approach, in which the focus is on the immediate needs and skills and situations that are not found in the Needs Analysis. In applying his idea to my theory, the following

chart illustrates the table of my research and its relation with the two approaches introduced by Brunton (2009).

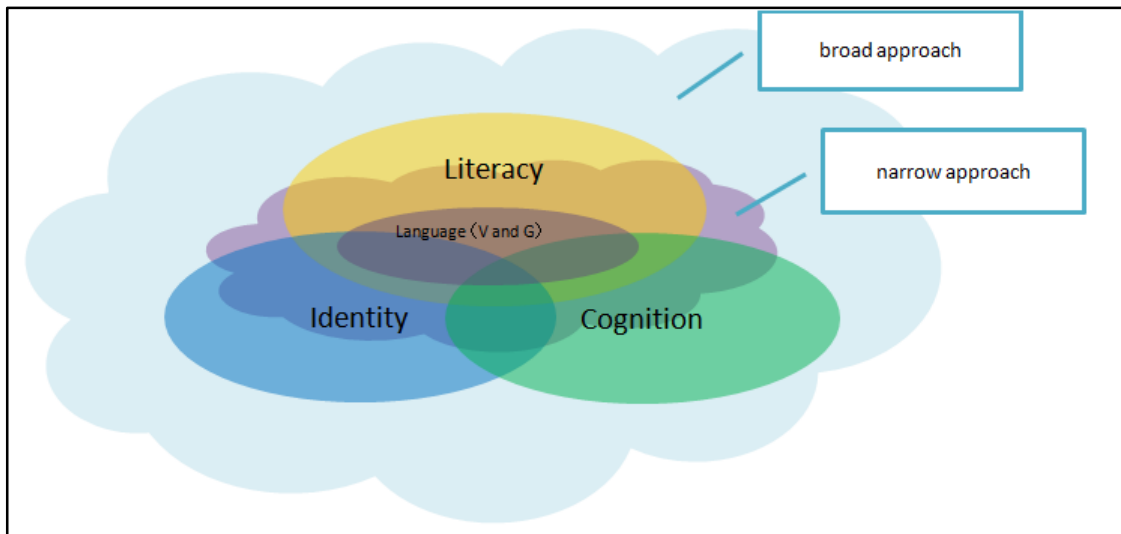


Figure 5. Multidimensional Needs Analysis in relation with Brunton's narrow-broad approach

In the figure I presented above, there are three oval shapes that are overlapping each other. In each oval I put the words “Literacy”, “Identity” and “Cognition”. I will explain the details of the words in the oval shapes later in the conceptual framework. To discover students’ needs, analyzing the needs is an essential procedure before designing a course. There are various instruments and methods of data collection in conducting a comprehensive Needs Analysis such as interviews, questionnaires, participant observations, audits, field notes and diaries (Long 2005). After the information is collected through Needs Analysis, different programs will be defined such as structural, situational, topical, functional, notional, skills-based, and task-based as well as recently introduced syllabus types. (Brown, 2005). Having this variety of notions of approaches in mind, to wrap up the chapter introduction, I designed the research question as follows.

### Research Question

1. What are the discourse communities of medical doctors? And how are the Literacy, Identity and Cognition in Time and Space of medical doctors in Japan?
2. How the multidimensional needs of medical doctors can be applied to English for Medical Purposes?

## 5. Conceptual Framework

Needs analysis is the process of finding the solution after determining the gap between the needs of the target situation and the present situation. So far in Figure 6, the twelve square shapes representing the target situation, the present situation, the gap analysis and the discussion in each step have not been filled in.





Figure 6. The Multidimensional Needs Analysis Model framework

### 5.1 Literacy

For people outside of the research fields, the term “literacy” has a rather narrow meaning, such as the acquisition of reading, writing, calculating, and computer skills. For example, generally, “illiterate person” means someone who has not acquired reading and writing skills. In developing countries, national and international agencies are concerned with the “literacy rate” of citizens by enhancing education by improving its curriculum and assessments. On the other hand, new literacy studies contain a broad range of topics and concepts. Researchers in the field aim to provide something new for the nature of the field and how new thoughts and ideas can be applied in diverse contexts (Street and Hornberger 2010). Recently, many researchers have conducted studies related to various types of literacy. For example, media literacy of students in a junior high school Yoshimura, 2022), ICT literacy in the medical school (Tomotaki, 2022), legal literacy in a university (Sakai, 2022). Thus, the range of the term “literacy” has kept expanding as the field of study has flourished. In this research, I will grasp how the research in literacy developed and how the study of discourse analysis can be applied to English Education and most importantly, the concept and the definition of literacy to apply in this research.

## 5.2 Identity

For many researchers, the term “identity” is extensive and intractable. Like the word “discourse”, its concepts might include discipline such as linguistics, psychology, philosophy, communication and cultural study. Although it is almost impossible to fully explain the concept of identity in a piece of thesis, at least, to clarify the notion of identity in this research will help understanding of the current study. As the research progressed, one question came to the researcher of the current study’s mind: whether identity belongs to personal or social. Countless thoughts in the literature of identity tend to question either identity as personal or social process. However, the position of the current research is that identities are inevitably both personal and social.

### 5.2.1 Identity as personal or social

This personal and social nature of identity will allow researchers to provide insight into the potential theory of the relation between the person and society. People might think personal identity and social identity should be distinguished (Vignoles 2017). This idea seems appealing, because individuals are not the same as a group or classrooms, it also resonates with a broader tendency in Western thought to consider social as opposing forces. According to Van Dijk (2002), identity may be regarded as a personal notion. While humanists regard individual presupposes that every person has an essential and fixed core, post structuralism supposes the individual as diverse and dynamic (Van Dijk, 2022). In the field of philosophy and psychology, the word ‘identity’ is frequently connected to personal identity. Tosi (2018) described in her article about a discourse in psychotherapy, that by changing personal identity, a person came to wonder who they are. Thus, identity is deeply connected to the person’s consciousness. However, she played the role of a psychotherapist and highlighted the importance of promoting personal growth, social responsibility and awareness of the relational processes that have healing value for clients and communities (Tosi, 2018, pp.139).

On the other hand, apart from the notion that identity belongs to a person, several other researchers in the field of sociology and linguistics regard identity as the way that person understands his or her relationship to the world. McAlinden (2018) conducted research on emotional understanding in English language teaching. She focused on finding from a study that explored intercultural empathy in an educational setting in Australia. She mentioned “teacher identity”. In her research, the identity does not sound like the notion that belongs deeply to change the person’s entity. In a broader sense. It belongs to a person’s occupation. When someone says, ‘occupation’, it might belong to a person. As one example of social role, a study described how construction of identity depends on recognition of one’s identity claims by the audiences, and they may be expected to enact different identities for different audiences. (Vignoles, 2017). He exemplified audiences, such as a husband and father at home, a teacher at work, a customer in the supermarket.

As Davis and Harre (1990) touched upon the concept of ‘role’, each individual plays some role in a society. Even well-educated doctors can be failing to perform adequately in the workplace depending on their given social role. After all, to assign an appropriate societal role positively affects the cognition of the individuals and leads to bring out the potential ability. Mi Park, et al. (2022) observed medical students’ identity to become a respectable doctor, for medical students, great attention has been given to professional identity in medical school to become doctor in the transition from student to doctor. In the course of medical school, medical students professed their identities as given to them by society.

However, as the time went by, various experiences during the medical school affected them and they started to think about becoming a doctor according to their own willpower., and they know the meaning of becoming a doctor in the profession. The last two studies were related to the doctor's identity in the medical community. Those two findings led me to build the platform to extend the understanding of professional identity and application to the learning experiences in medical school.

### **5.2.2 Social identity theory**

For the purpose of investigating the construction of social identity, the social identity theory will be adapted for this study. In several theories of identity, Stryker (1987) explained identity theory which approved a sociological approach. Social identity theory of intergroup relations (Tajfel & Turner, 1986) and self-categorization theory (Turner, 1987) both used a psychological approach. Social identity theory can be explained by two categories: Identity theory which is group-based, and identity theory which is role-based. Group-based social identity is considered by the uniformity of perception and actions of the members of a group who may not have direct relationship with each other. On the other hand, role identity is characterized by differences in performances of the role occupant and the counter-role occupants who relate to each other in an interaction context or situation. Although people can see identity theory from these two different views, it does not mean research has to choose one theory. For the present study, the researcher will adapt both viewpoints that identity can be characterized as a group and as a role. Even more important, the idea I will mainly focus on in my dissertation is personal identity. (Vignoles 2017). Personal identity is seen when an individual acts to achieve his or her own goals and desires instead of acting as a member of a group or category (Stets & Burke, 2000). Deaux (1992) stated that a person's actions may reveal some features of the group's norms which the person consents to, and some actions may be based on the person's feelings and values. Personal identities are added to one's social identities when they are producing distinctive and unique ways of communicating membership in particular groups. Having in mind the "personal identity" in the context of social identity theory can be featured in the notion of "identity" in my current research, it is expected to move into the notion of Van Dijk (2015) that personal existence in society would be natural flow of rational consideration. The notion of identity as it has an invariable fixed core in each individual is discussed in the future study.

### **5.3 Cognition in time and space**

In the past, the dominant approaches to Lingua Franca English were influenced by a structuralism's orientation that prioritizes verbal resources in face-to-face contexts. However, recent developments in globalization, mobility, and digital communication call for a more complex orientation. Researchers should consider that semiotic, material and multimodal resources beyond words should be treated as part of the data (Canagarajah, 2018). To summarize his approaches in three parts, the first is the limitations in the dominant approaches such as the fact that the focus is largely on verbal resources. Although laughter and silence have been addressed in some studies, they have been treated as paraverbal cues. Also, the features of the body such as gaze, gesture, posture, proximity and positioning have also not been included in speakers' interactions. The second is emerging theoretical approaches. In the past, in the structuralism's orientation, the social, geographical, historical, and material considerations were treated as secondary to the more primary grammar. However, he develops the spatial orientation to multilingual interactions, saying that the language is situated and embedded in material life. After all, people speak in order to get

things done, not to prove their proficiency in the grammatical system. Thirdly, he illustrated the need to accommodate more diverse semiotic resources and expand the unit of analysis. He brought out the implications for a spatial orientation. As for methodological implications, in the context of globalization, researchers have to consider local interactions as embedded in layered trans-local time and space scales they experience in their everyday life (Canagarajah, 2018).

In the context of discourse community, discourses are always embedded in a series of social institutions. People create identities and behaviors together with something not just language, but some other thing that is not language. Depending on their occupation and the position in the society, their clothes, way of thinking, behavior, way of communicating, values, thoughts, beliefs, symbols and tools used in conversations tend to vary. Thus, it is useful to think about social and political issues. Gee (1999) pointed out that the discourse existed before each of us came on the scene and most of them will exist long after we have left the scene. (Gee, 1999). Based on the notion two authors mentioned above, the current research will consider the way medical doctors created and situated within their discourses and how they recognize their discourses in time and space.

## **6. The study**

### **6.1 Overview**

For this study, data has been obtained from several sources to make the data collection method more reliable. According to Long (2005), triangulation involves the researchers comparing different sets and sources of data with one another to increase the credibility of their data so as to increase the credibility of the interpretations of those data. Thus, in the current research, the data comes from in-depth interviews with 11 medical professionals working at hospitals and research institutions, participant observation with 13 medical doctors followed by questions and interactions by e-mails, and questionnaires for the 81 students in the Health and Science department in Juntendo University. Due to the limitation of space, these methods are illustrated in Table 1.

Methods	Data Collection Methods	Participants
1 Interview	written and electric forms of question sheets	Doctors
	face to face interview recording	Dentist
	zoom video recording	Veterinarian
		Student Researchers
2 Participants Observation	note-taking for 8 sessions for 15 speakers	Doctors
	video recording	
	interview by e-mail exchange	
3 Questionnaire to the students	written forms of question sheets	Students

*Table1. methods of data collection*

## **6.2 Participants**

### **6.2.1 Participants of the Interview**

Since this is a preliminary study, explanations are omitted. Participants of the interview will be shown in Table 2

Interview Date	Participant's Name *Pseudonym	Gender	Age	Affiliation, Speciality
March, 4 <sup>th</sup> , 2020	Dr. Kotani	M	66	Veterinarian, research worker, immunology
March, 6 <sup>th</sup> , 2020	Dr. Funabashi	M	34	Cardiology doctor, graduate student
March, 9 <sup>th</sup> , 2020	Dr. Tsuchiya	M	43	Medical Director of Cardiology, Associate professor
March, 11 <sup>th</sup> , 2020	Dr. Hirata	M	47	Endoscopic surgeon, Associate professor
March, 18 <sup>th</sup> , 2020	Dr. Fujisawa	M	49	Breast endocrinology surgeon, Associate professor
March, 20 <sup>th</sup> , 2020	Dr. Matsumaru	F	41	Obstetrician and gynecologist
August, 4 <sup>th</sup> , 2020	Dr. Sakai	M	46	Breast endocrinology surgeon, cytopathology
August, 23 <sup>rd</sup> , 2020	Dr. Namba	M	43	Emergency doctor, Intensive Care doctor
August, 28 <sup>th</sup> , 2020	Dr. Nimura	M	55	Chemotherapist, Surgeon
September, 1 <sup>st</sup> , 2021	Dr. Ishida	F	59	Medical Technologist, Laboratory technician
January, 21 <sup>st</sup> , 2022	Dr. Kataoka	M	33	Prosthodontics, Dentist, advanced prosthodontics at San Antonio
				Total Length of Interview - 705 min. (11 hours and 45 min.)

*Table 2. interview participants*

### 6.2.2 Participants of the Observation

Participant observation was conducted on May 14<sup>th</sup> and May 15<sup>th</sup> 2022, in Kyoto (Japan). The 3<sup>rd</sup> World Congress of GI Endoscopy, ENDO 2022 took place. More than 9,000 participants were expected. Due to the space limitation, explanations are omitted. Participants of the observation will be shown in Table 3 and 4.

ENDO 2022					
Date/time	Title of the sessions I observed	The number of Chairmen and Presenters	Participants of this study	Permission to use the field note	Permission to use the video
May 14th 9:00:00	Optimizing the monitoring strategy monitoring strategy of Crohn's disease	Chair 3 (Japan 2 U.S.1) Commentator1 U.S. Presenter7 (Taiwan2 Japan 3 Belgium 1)	Dr. TAKADA Yoshiaki Dr. KIYOHARA Hiroki	<input type="radio"/> <input type="radio"/>	× ×
10:30	S09 Advances in colorectal polypectomy and endoscopic mucosal resection	Chair 3 ( U.S.1 Vietnam 1 Singapore 1) Presenter4 (China 1 Japan 1 Australia 1 Italy 1)	Dr. MATSUDA Takahisa	<input type="radio"/>	<input type="radio"/> he sent my his own video privately
12:00	Luncheon 5	Chair 1 ( Japan) Presenter2 (China 1 Japan1)	Dr. FUJISHIRO Dr. ISHIKAWA + two staffs from Olympus	<input type="radio"/> <input type="radio"/>	<input type="radio"/> very cooperative manner. The copyright is on the Olympus <input type="radio"/>
13:00	Update on endoscopic biliary stenting	Chair 3 ( U.S.1 Japan 1 Korea 1) Presenter7 (China 1 Japan 2 Singapore 1 Korea 2 U.S.1)	I couldn't talk to Dr. KATAYAMA Akio Dr. NAKAI Yosuke		
14:45	BA06 Best Abstracts: Oral	Chair 1 ( Japan 1 ) Presenter6 (China 1 Japan 3 Hong Kong 1 Germany1)	Dr. UCHIDA Ryota Dr. INOUE Ken	<input type="radio"/> <input type="radio"/>	<input type="radio"/> doctor in Juntendo hospital <input type="radio"/> he was very happy to participate in my research
16:00	The current situation and future endoscopy (IEE) - from polyp detection to characterization including AI technology	Chair 3 ( Japan 1 Germany 1 Norway 1 ) Presenter8 (Italy 1 Spain 1 Belgium 1 Japan 3 Netherlands 1 )	Dr. MURAKAMI Takeshi Dr. URAOKA Toshio	<input type="radio"/> <input type="radio"/>	<input type="radio"/> doctor in Juntendo hospital <input type="radio"/> "please use my data"

*Table 3. observed participants on June 14th, 2020*

Date/time observed	Title of the sessions	The number of Chairmen and Presenters	Participants of this study	Permission to use the field note	Permission to use the video
May 15th 8:00:00	Breakfast Industry Symposium	Chair 1 (Japan 1) Presenter3 (Japan 3)	Dr. KIDA Mitsuhiro	<input type="radio"/>	<input type="radio"/> The copyright is on the cooperation
9:00	joint symposium: Further development of submucosal endoscopy and related techniques	Chair 3 (Japan 1 U.S.2) Presenter7 (U.S.3 Japan 3 Italy 1)			
11:00	BA05 Best Abstracts Asia: Oral	Chair 1 ( Japan) Presenter3 (Korea 1 Japan 1 China 1)	Dr. TAKENAKA Mamoru Dr. SATO Tatsuya	<input type="radio"/> <input type="radio"/>	<input type="radio"/> "No problem, please use the data" <input type="radio"/>
12:00	Luncheon 9	Chair 1 ( Japan) Presenter2 (China 1 Japan1)	Dr. SAITO Yutaka	<input type="radio"/>	<input type="radio"/> very cooperative
13:00	Joint Symposium	Chair 3 ( China1 Japan 1 France 1) Presenter9 (China 6 Japan 2 U.S.1)			

*Table 4. observed participants on June 15th, 2020*

### 6.2.3 Participants of the questionnaire to the students

The participants of this questionnaire were 80 students of the Faculty of Health and Science in Juntendo University.

### 6.3 Data Analysis

As an analysis method, semantic cluster analysis is used to code the expressions that appear repeated in the interview data of each participant. There were many cases where the similar elements included in the remarks of healthcare professionals appeared in the same context in the complex way (Kuhn, Ducasse and Girba, 2007).

## 7. Interim Data and Future Study

As an interim conclusion, the literacy can be defined as “naturally acquired attitude and abilities that doctors certainly obtained in everyday life”

### 7.1 Target Situation in EMP

At the ENDO conference, the gestures and poses of the presenters and coordinators were exact and ideal. The researcher sent e-mail to the doctors to show the appreciation. Then the doctors returned to explain why they came to do those kinds of gestures and take poses. Several e-mails have exchanged to see whether those actions are naturally occurring or conscious action. They vividly describe their experiences, but from distinctive perspectives.

Excerpt - literacy 1

石原：あのような場面ではあまり余裕がありませんので、意識的にというよりも聴衆の方に伝わるようにした結果、そのような仕草が出たのだと思います。また、自分は本来あまり話たりするのが得意ではありませんし、好きでもないのに、言葉が出てこないことがあります。そのような時に手を動かすことで言葉が出て来やすいことを、なんとなく感じており、言葉が出やすいように手振りが出たのだと思います。

Ishihara: I don't have much time to spare and think in such a situation, so I think that such a gesture came out as a result of trying to convey the message to the audience rather than I did it consciously. Also, I'm not really good at speaking, and I don't like speaking. Sometimes the words do not come out of my mouth. I somehow felt that it was easier for words to come out by moving my hands like that. I think that the gestures came out so that the words could come out easily.

In his presentation, he was precise and fluent. When asked if his gesture and pose are conscious or automated, he said, he was not thought about the gestures. It was automated. The following still image shows his presentation. He was fluent at the time of the presentation, but in Q and A session, when the Q & A session start, (1) He slowly started greeting to the coordinator and the audience. while he was thinking, (2) He was posing holding a microphone in both hands. After that, when concentrating his thought, (3) He looked down and raised his right and continued speaking. After that, (4) He stopped speaking once, stared at the coordinator, looked at the questioner with his mouth open, (5) At the last of his Q&A session, when his thoughts were settled and he was able to speak confidently and fluently again, and seems like he now knows what to talk and continued talking again with gestures. he became confident, and his facial expression become serious and he became passionate again.

(1)



“Thank you for the introduction,  
Professor Fujishiro”

(2)



“Maybe iodine staining is still useful,  
ah.....for.... Inexperienced  
endoscopist ....

(3)



“ah...in some case..ah...(thinking)...  
Iodine staining can display... cancer  
spread...

(4)



“Better than NBI...”.... nodding

(5)



“I think NBI and iodine staining  
Complimentary ah....methods...for the  
diagnosis of espagion cancer”.....  
Nodding nodding.....

Excerpt - literacy 2

浦岡：クイズ形式はもちろん意識して設けました。ポーズなどは少し意識しているかと思  
います。

Uraoka：Of course I made the quiz on purpose. I think I was a bit conscious  
of making poses.

Dr. Uraoka, is very skilled in oral presentation. In addition to his knowledge in his specialization, he has a very good sense of humor. His presentation also showed his talent as a leader. His slides have several interesting quiz formats. The content of the quiz was simple for the endoscopic experts in the venue. See the still image of his presentation below. At the beginning of the presentation, when he was being introduced by the coordinator, (1) he looked very dignified and showed his passion with his lips closed tight. (2) His appearance during the presentation and Q&A section, he also talked in a stately manner. He twirled his right hand to make gesture in saying “more, more accurate diagnosis”. and (3) he looked faithfully at the coordinators after he finished making gesture and settled toward the end of his answer in the Q&A session.

(1)



(coordinator)

“I’ d like to introduce professor Uraoka  
from Gunma University”..



(2)



“Okay, considering to western situation,  
So, the more, more, accurate diagnosis, prior to cold polyflectomy... is.. “

(3)



“is...required by western...  
This is my comment...”

Excerpt - literacy 3

佐藤：間の取り方はあまり意識していませんでした。自身での英語発表の経験はあまり多くないのですが、海外留学していた上司の発表を聞いたり、(主にコロナ前ですが)海外学会で外国の先生の発表を聞いたりする機会は比較的多くあったので、その真似をしている中で身に着いたのかもしれない。

Sato : I wasn't really aware of how to pose. I don't have much experience in making English presentations myself, but I have a relatively large number of opportunities to hear the presentations of my boss who was studying abroad and the presentations of foreign teachers at overseas.

Sato is also an endoscopic surgeon the researcher met at the ENDO conference. (1) When he was introduced by the chairman, he smiled and started his speech in seemingly calm atmosphere of the venue. He listened carefully when the chairman asked him several questions during the Q & A session. The chairman mostly agreed his presentation. However, the chairman also decided to ask Sato whether the conventional method of using only one conventional equipment would be easier. (2) He seemed to have excited with the question by the chairman. And his pace of speech became faster. Even the Chairman politely asked Sato the question contained the idea that opposed to his method, (3) He just continued smiling to answer the carefully using the figure of percentage of the cohort of his study. He looked at the chairman politely, and his answer was concrete and backed by the statistic figure. (4) When he tried to remember the number, he looked up. Both the presenter and the chairman spoke fast. Nevertheless, Sato seemed to have been calm by his attitude. (5) After the Q&A session was over, both speaker and the chairman looked content and they both smiled.

(1)



The second speaker is Tatsuya, Sato....

(2)



Thank you for the question. it's a good point....ah,, in our cohort, 75 % of patient....are

(3)



We defined after one year treatment...  
So we decided to .....

(4)



so we are safer... rescue stent is used  
in 90 % of the cohort.

(5)



Thank you...

According to data, the identity can be defined as “a character to keep motivated to make continuous effort”. For cognition from a time and space, “imagination in other places that are not this place” or “imagination for other times that is not now” are terms to define it. The following diagram illustrates the whole picture of multidimensional needs analysis from the current data.

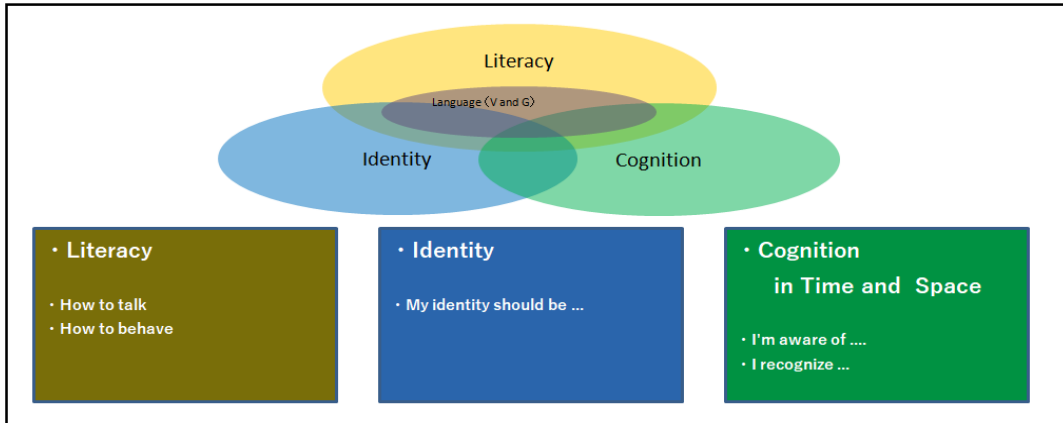


Figure 7. the illustrated image of multidimensional needs analysis

## 7.2 Future study

So far, the overview of the future research plan including conceptual framework and the new multidimensional needs analysis was discussed. There were quite a few drawbacks currently for this paper to be accomplished as a doctoral dissertation.

1. The researcher has not been able to clearly evaluate which concepts can be used as reference for this research and which parts are not appropriate. Several names of the authors and concepts were pointed out, nevertheless, it seemed as if names and concepts were only introduced. The researcher is still unable to connect them to the discussion and argument.
2. When generalizing theories and current trends, it is necessary to show evidence such as literature review and data. Also, it is necessary to adhere to the APA style.
3. The theory and concept introduced in the first half of the paper and the data analysis deviate. The discussion and conclusion should be backed up by pedagogical theory, analysis, and actual data.

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