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Affordances and Challenges of Mixed-Methods Needs Analysis for the Development of ESP Courses

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Abstract

This paper addresses the conceptions of needs analysis and mixed-methods research, and the affordances and challenges of mixed methods needs analysis in implementing ESP courses. Language researchers and educators maintain that a lack of identifying students' needs hampers the development and improvement of English language education in ESP. ESP teachers and educators may not be cognizant of utilizing needs analysis effectively in their classrooms. Hence, the purpose of the paper is to characterize mixed-methods needs analysis and recognize affordances and challenges of using needs analysis with the considerations of mixed methods in research on foreign and second language education. A systematic mixed-methods learner needs analysis can increase the rigour of course design, materials development, and the enhancement of curriculum and instruction. This paper also informs ESP educators, teachers, professionals, and researchers of the usefulness and practicality of mixed methods approaches in conducting needs analysis for ESP learners in the educational context.

Keywords: *Needs Analysis, Mixed Methods, ESP, Curriculum and Instruction*

Introduction

Systematically developing curriculum and instruction is critical and serious in education. As theories and disciplines are established, methodological issues have also been highlighted in language education (Bernstein, 2018; Divan et al., 2017; Healey et al., 2019; Hutchings, 2007; Lock et al., 2018; Miller-Young & Yeo, 2015; Webb & Welsh, 2019). The theory is critical in establishing the scholarship of language education because it is aligned with a process of "meaning-making and knowledge-building" (Hutchings, 2007: 3). This process of theory involvement takes different forms with multifarious sources and disciplinary expertise (Hutchings, 2007). Educational researchers have delved into language education with their disciplinary interest and expertise and have grappled with up-to-date literature and unacquainted research methods (Healey et al., 2019). In this regard, Hutchings (2007)

concerned the discrepancy between theory and practice due to varied applications in language education. Miller-Young and Yeo's (2015) claim is that theory and methodology are explicitly and implicitly aligned, which signifies that theory assumes what and how people learn and methodology as the assumption about how and why a study is conducted.

Conducting needs analysis is necessary due to its specific and varied purposes and functions in English language education's current or future use (Long, 2005). Many educational scholars and researchers (Brown, 2009; Dudley-Evans & St John, 1998; Flowerdew, 2013; Hyland, 2014; Johns & Makalela, 2011; Kaivanpanah et al., 2021; Long, 2005; West, 1994) have addressed the significance of implementing needs analysis in the field of education. West (1994) offered three major functions of needs analysis: 1) improving teaching methods, 2) adapting the teaching to the type of learning public, and 3) training the learner how to learn (p. 2). Hyland (2014) considered needs analysis critical in collecting and assessing relevant information about course design and development. Flowerdew (2013) provided a chronological overview of needs analysis in English for academic and occupational purposes, emphasizing corpus-based methodologies (Biber, 2006) and ethnographic and socio-rhetorical genre-analytic needs analysis (Jasso-Aguilar, 2005) as crucial in the field of language teaching and learning. Kaivanpanah et al. (2021) indicated the EAP teachers' crucial roles and responsibilities in performing needs analysis.

In the 1970s, a notional-functional system developed by Wilkins (1974) was popular in developing and implementing syllabi and pedagogic materials in education. This notional-functional approach has been believed to meet various learners' language needs in a standardized way. The sequences of lexical, structural, notional, and functional language components are pre-planned in this prescriptive way, assuming that these sequences meet learners' needs. However, Long (2005) criticized a heavy reliance on the notional-functional way to understand learners' needs. However, it included conflicting issues such as developmental structures in foreign and second language learning (Larsen-Freeman & Long, 2014) and cognitive processing constraints on learnability and teachability (Pienemann, 1998).

Furthermore, the prescriptive notional-functional approach to assume students' needs is decontextualized, misleading the information about the learners' actual needs. Most linguistic analyses are based on the supra-sentential and textual level, which does not reach the satisfaction of foreign and second language learners. For these reasons, Long's (2005) task-based syllabus has become practically affordable as a potential needs analysis. Task-based needs analyses are learner-centred, aligned with learners' internal development of language learning. Long's (2005) extensive survey of the scholarly literature on needs analysis enabled us to pinpoint the potential of using various sources from insiders' and outsiders' perspectives to combine qualitative and quantitative methods.

This paper addresses the definition of needs, the rationale, and the affordances and controversial issues of the mixed-methods approach in implementing and utilizing needs analysis in language education, particularly focusing on ESP courses. This paper also attempts to expand Long's (2005) discussion about using different methods for the development of needs analyses in language education. Despite the paucity of relevant mixed-methods needs analysis in ESP classroom research, it is important to consider mixed methods

for learner needs analyses. Hence, this paper strives to fill the gap mentioned above in bridging theory and practice by delimiting the conceptions of needs, needs analysis, and mixed methods research and unfolding the ways educational researchers have conglomerated mixed methods research and needs analysis in the field of ESP and broadly language education.

What are “Needs”?

It may be obvious that English language courses are necessary for college students' intellectual and linguistic development and higher education careers. However, we often neglect what the language course is for. Do college students take language courses because there is a policy to promote communication competency in college? Is the language course seriously and solely for college students or for university? No matter whether a policy matters, it may still be essential to consider why language courses are offered and what their benefits are for college students to take. In this regard, identifying the needs of language learning and use is critical in higher education. As language educators and professionals, we need to develop syllabus designs and prepare relevant materials to meet the learner needs. The needs may be the present or future requirement of learners, indicating “the students' study or job requirements, that is, what they have to be able to do at the end of their language course” (Widdowson, 1981, p. 2). Needs are what is perceived by the society, the organization, and/or particularly language programs and instruction (Mountford, 1981). Basturkmen (1998) identified language needs as the important consideration of acknowledging the gap between the present proficiency and the target proficiency of learners, which greatly influences the development of syllabus designs, curriculum and instruction. Needs have been described as learners' goals, desires, preferences, expectations, and/or necessities of language learning (Hyland, 2014; Richards, 2013). Needs can also be students' awareness of language proficiency and their motives for taking a course (Hyland, 2014). Recently, Brown (2016) defined language needs as “sets of judgments and compromises justified by observation, surveys, test scores, language learning theory, linguistics” (p. 16). Needs analysis can function as the rigorous and methodical investigation of the learner needs for syllabus designs, curriculum and instruction in education.

Needs Analysis in ESP

Needs analysis has widely been used in the field of ESP across different disciplines and countries (Ahmmmed et al., 2020; Alhasani, 2021; Creamer & Ghoston, 2013; Javid & Mohseni, 2020; Karapetian, 2020; Miller, Klassen, & Hardy, 2020; Petraki & Khat, 2020; Thepseenu, 2020; Yatroon, 2020). In particular, STEM has utilized needs analysis for various reasons (Alhasani, 2021; Creamer & Ghoston, 2013; Petraki & Khat, 2020; Thepseenu, 2020). Creamer and Ghoston (2013) conducted a mixed-methods content analysis of the mission statements of colleges of engineering in mapping derived codes and examining any significant association with institutions that robust representations of women. The mixed-methods content analysis showed the significant relationship between the diversity code and the representation of women. Alhasani's (2021) study examined the impact of the ESP courses on the communication of engineering and/or architecture students in Albania. A

mixed-method with the questionnaire and the semi-structured interviews was used in exploring the students' needs. The findings revealed that the students' high interest and emergent appreciation contributed to the development of cognitive acquisition and the improvement of soft skills. Thepseenu's (2020) study investigated language needs and perceptions of civil engineering students in Thailand. A mixed methods design including the survey questionnaire and focus group interviews was employed to explore the students' perceived language needs on the ESP course. The study discovered that students needed the development of speaking and listening skills related to work and career situations. The participants also preferred pair and group work activities. Petraki and Khat's (2020) study examined the challenges and constraints of both industry and academic stakeholders who designed an ESP course in the field of STEM in a Cambodian university. Data were gathered and analyzed with the use of interviews and document analysis. Several challenges included a dearth of ESP training opportunities, a lack of teacher motivation, the hardship of material development, and the students' low level of English proficiency. The study implied the importance of collaboration and shared decision-making as the key to the ESP course design success. Most needs analysis research tends to put a heavy focus on students' perspectives for curriculum and course designs. However, Petraki and Khat's (2020) study attempted to see the stakeholders' views, which has tried to fill the gap of needs analysis research.

Other disciplines have paid close attention to various ESP learners (e.g., economics and law students, nursing students, guarding police cadets, seafarers). Lock et al.'s (2018) study explored the impact of co-teaching in nurse education by examining the students' and instructors' perspectives and experiences of co-teaching by using mixed methods. Ahmmed et al. (2020) identified the needs of acquiring maritime English language skills for Bangladeshi seafarers who work on ships and seek employment opportunities in the maritime sector. Senior cadets and recruiting agencies were the participants of the study. The study employed a mixed-method design to collect both qualitative and quantitative results. The study revealed that communication efficiency was an essential skill for the seafarers, and the agencies required their cadets to improve speaking skills the most. Ahmmed et al.'s (2020) would be meaningful in that no studies were conducted on the needs analysis of the maritime skills and qualifications that the Bangladeshi maritime graduates require to work on-board vessels. Javid & Mohseni's (2020) study described needs analysis of the ESP curriculum for guarding police cadets in an Iranian university by utilizing an exploratory sequential mixed methods design. The learner factors, target situation, present situation, and specialist discourse of the participants were analyzed through needs analysis. The findings showed the different needs of the stakeholders, the mismatch between the major purpose of the curriculum and the ESL course, and several suggestive ways of curriculum development. Karapetian's (2020) study evaluated the flipped classroom model of the ESP course, Business English, at the college of Economics in Ukraine. The economics students' critical thinking skills and academic performances were measured through a mixed-methods experimental study. The findings showed that the students in Economics perceived flipped classroom as useful in developing their critical skills and academic performances through the involvement of problem-solving activities and the use of different learning styles. Yatroon's (2020) study explored international law students' language needs with the use of the mixed methodological

approach at Iran universities. The results showed the disagreement between the learners' needs and the expected needs from the relevant tasks in the textbooks, which can be useful to material developers and book designers in the field of law ESP.

Overall, all of the studies indicated that their universities in different countries have not considered conducting systematic needs analysis seriously, and the needs analysis has been under-evaluated in the field of ESP. Divan et al.'s (2017) review study implied that further investigation of mixed methods research would be advantageous in the development of ESP courses with rigour.

Characteristics of Mixed Methods Research

Mixed-methods research has been acknowledged as a potentially adequate research method to confront the complexity and the abstractness in the levels and phases of manifold data sources, data analyses, research designs, and interpretation of data collection and analysis in education (Creswell & Clark, 2007; Howe, 1998; Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2003; Wilkinson & Staley, 2019; Yin, 2006). The term mixed methods research refers to "an intellectual and practical synthesis" (Johnson, Onwuegbuzie, & Turner, 2007: 129) in the process of collecting and analyzing data, integrating the findings, and drawing inferences with the use of both quantitative and qualitative methods and/or approaches in a single study (Creswell & Clark, 2007).

Mixed methods research designs have several characteristics, particularly aligned with the major purpose of research: answering research questions in practice per se. The inquiry in research can be achieved through data collection and analysis in both quantitative and qualitative domains (Teddlie & Tashakkori, 2011). Mixed methods research designs embrace the complexity of the data source collection and analyses with divergent perspectives. Mixed methods research sanctions an emphasis on the research question with proper methods and approaches within a single study (Johnson & Onwuegbuzie, 2004; Teddlie & Tashakkori, 2011). In this way, language and educational research can be posited in a transformative or transdisciplinary framework by addressing different theoretical and methodological perspectives at different levels and phases under the pragmatic paradigm. Language and educational researchers (Hashemi, 2012; Hulstijn et al., 2014; King & Mackey, 2016; Riazi, 2016; Riazi & Candlin, 2014) have delved into the development of mixed methods research in the field of education. Mixed methods research can expand the extent and the scope of research by layering (King & Mackey, 2016) methodologies across diverse epistemological perspectives. Needs analysis can collectively and collaboratively be examined with mixed methods for real-world problem solving of language learning, including diverse epistemological stances, in ESP classrooms. Hashemi and Babaii's (2013: 828) study showed the potential of mixed methods research as novel research designs, suggesting the effective use of mixed methods research as a "versatile research methodology" in the field of education.

Affordances of Mixed Methods Needs Analysis

Triangulating methods for mixed-methods needs analysis is salient in ensuring credibility and dependability (Long, 2005). On top of the function of triangulation, mixed methods research can offer an avenue to implement needs analyses efficiently. Greene, Caracelli, and Graham

(1989) proposed five functions of mixed-methods designs: (1) triangulation/convergence, (2) development, (3) complementarity, (4) expansion, and (5) initiation. Triangulation/convergence encompasses answering the same question with the use of both types of quantitative and qualitative methods, either by converting data from one type into another (e.g., qualifying quantitative data or quantifying qualitative data) or by comparing the results to reach the same conclusion (triangulation). Development involves using one method for some questions and the other method for other questions (e.g., developing interventions or data collection measures). Complementarity exploits each set of methods to answer a series of questions for the purpose of elaboration (e.g., using qualitative data for the depth of understanding and quantitative data for the breadth of understanding). Expansion signifies using one method to answer research questions raised by the other type of method (e.g., using qualitative data to describe the results of quantitative data). Initiation is about combining qualitative and quantitative methods to resolve or uncover any contradiction of the results in research. Mixed methods research can be a fundamental research method to make needs analysis rigorous and systematic. Mixed-methods designs can help us reconceptualize and develop needs analysis by triangulating multiple sources and different analyses and developing, expanding, complementing, and strategically initiating them.

Challenges of Mixed Methods Needs Analysis

Despite the significance of using mixed methods for needs analysis, we may encounter some challenges and controversial issues of conducting mixed methods needs analysis in the field of education. Johnson and Onwuegbuzie (2004) recognized several challenges of using mixed methods in research and curriculum development, which researchers should be aware of when they implement needs analysis with mixed methods. Researchers must learn multiple methods so that they can analyze mixed data with rigour. Melekhina and Ivleva (2020) discussed psychological problems and pedagogical issues that novice teachers encounter at the workplace. It may also be a daunting task to interpret conflicting issues and contradictory results, analyze quantitative data qualitatively, and vice versa. Conducting needs analysis with mixed methods may be expensive and time-consuming due to varied phases and diverse data collection and analyses. It may take a relatively longer time for researchers and practitioners to collect and analyze data sources. Mirhosseini (2017) has recently problematized the puzzlement of the epistemological viewpoint in conducting mixed methods research. In mixed-methods research, objective measurement is essential (Sale, Lohfeld, & Brazil, 2002) in the positivist epistemological stance, while contextual meaning-making is the purpose of conducting qualitative research (Denzin & Lincoln, 2007) in the interpretivist-constructivist position (Mirhosseini, 2017). Mirhosseini (2017: 5) maintained that “epistemological incompatibility” favoured in other mixed methods research (Hashemi, 2012; Riazi & Candlin, 2014) is not convincing. Mirhosseini (2017) argues that “the choice” (Riazi & Candlin, 2014: 143) of a foundational paradigm (i.e., pragmatism or critical realism) is problematic, and a concrete epistemological stance for mixed-methods research should be commenced in research. The cramps of the epistemological stance of mixing methods may be reasonable in a sense.

On the other hand, we would argue that learners’ language needs may not merely emerge

on the surface with an extremely limited standpoint. The phases of collecting, analyzing, and interpreting data sources in conducting needs analysis should appropriately be layered to do the right needs analysis. Therefore, mixed methods designs can enable researchers and practitioners to discover actual learner needs in a pluralistic and corroborative way in the classroom context. Furthermore, faculty mentoring would be effective and helpful to novice teachers and professionals to implement needs analysis (Melekhina & Ivleva, 2020). In this regard, senior faculty can share their ideas and knowledge of mixed methods needs analysis and collaborate with novice and inexperienced researchers and teachers in a teacher community.

Discussion

While other disciplines or areas of research (e.g., health and medical science, engineering education) have made noticeable progress in building systematic methods of needs analysis with mixed methods, not many language teachers and practitioners appreciate how developing mixed methods needs analysis in rigour. Onder-Ozdemir's (2019) longitudinal critical needs analysis identified the English for academic purposes (EAP) needs of undergraduate medical students. This study presented the process of developing critical needs analysis in EAP by employing mixed methods. However, language education and applied linguistics have not yet developed the academic discourse regarding the practicality, applicability, and affordances of mixed methods for needs analyses, particularly in the EFL context. Thus, it is critical to bear learner needs analysis with mixed methods research in mind as follows:

First, the systematicity of mixed methods research methods is often disregarded in the implementation of needs analysis. The notional-functional system (Wilkins, 1974) has not represented what learners want or lack due to its characteristic of the prescriptive standardization. Instead, Long's (2005) task-based needs analysis uncovered learners' language and learning needs. Long saw the potential of mixed methods and applied it to the enactment of needs analysis. Researchers and educators who conduct mixed methods needs analysis should consider the major three components: the purpose of needs analysis, stakeholders, and multiple sources. Implementing mixed-methods needs analysis entails multiple data sources for the breadth and depth of analysis because the triangulation of data sources commonly brings about convincing findings with validity and credibility (Long, 2005).

It should be noted that triangulating data sources and analyses is not the ultimate tactic in successful mixed methods needs analysis. As Greene et al.'s (1989) proposal of different functions, needs analysis can develop, expand, complement, and initiate data sources and analyses in investigating learners' needs. It is also important to approach and develop mixed methods needs analysis concurrently or sequentially on a research-based system.

Second, mixed-methods needs analyses can help broaden the fields of research through capacity-building in encountering mixed methods at leading institutions. Mixed methods needs analyses can be used by organizations to prioritize learner needs and improve syllabus designs, curriculum and instruction. The quality processes can be assured through the comprehensive understanding of learner needs (Kiely & Rea-Dickens, 2005) and the

evaluation process of curriculum and instruction, accompanied with mixed methods.

Third, we should focus on not only learner needs but also teacher needs. Seminal studies of Basturkmen (2017) and Bocanegra-Valle & Basturkmen (2019) discussed the issue of teacher needs, which is critically important but is under-researched. In particular, teacher needs in ESP remains an unexplored constituent in teacher education (Basturkmen, 2017). Teachers are also stakeholders of course designs, curriculum development, and broadly teaching and learning. Teachers' voice should also be heard for successful language learning and teaching. Teachers' needs can be analyzed by themselves and/or with institutional support. In other words, institutions should take educators and teachers' needs into account to achieve the ultimate goal of education.

Although the process may require a deep understanding of the complex and dynamic context and setting, the investment in the development of rigorous mixed-methods needs analysis would be a crucial component towards empowering ESP educators and teachers to pursue high quality instructional activities and advance curriculum and instruction in the field of ESP education, which leads to its productivity and effectiveness. This paper would also help ESP researchers and professionals to explore the gist of mixed-methods needs analysis to make progress in the field of ESP.

Conclusion

All in all, a thoroughly sequenced mixed-methods needs analysis can contribute to the rigour of course design, materials development, and the improvement of curriculum and instruction. Hence, it is crucial to be cognizant that implementing mixed methods needs analysis systematically. This paper also informs ESP educators, professionals, and researchers of the practicality and usefulness of mixed methods approaches in implementing needs analysis for learners and teachers in the educational setting.

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No, there are no conflicting interests.

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