An examination of the difficulties faced by ESL instructors and students in the fields of engineering and technology

B.Shakar[1],Mudigonda Naga Raju[2],K.Eswar Rao[3],Doopati Pitchaiah[4],
Dept.: Humanities & Science
Nagole Institute of Technology and Science,
Kuntloor(V),Hayathnagar(M),Hyderabad,R.R.Dist.-501505

ABSTRACT

It is an endeavour by Malaysian technical and engineering tertiary institutions to resuscitate the pedagogical approaches of ESL learning and communication skills at these universities. Examining the ESL practitioners' setting has shown that there is a crucial gap between the diverse needs of skills and solid pedagogical models to assess the quality of the practitioners' teaching. This research intends to analyse and investigate the problems experienced by practitioners in enabling the method in order to comprehend the need of the approach. 14 ESL specialists were interviewed in semi-structured interviews, and 42 ESL practitioners in technical and engineering domains were surveyed online. In order to get a better understanding of the obstacles and abilities needed to solve them, interview questions were devised for specialists. There were five-point Likert scales used to measure the significance of the competences in the method. The data was analysed using frequencies and percentages, as well as Braun and Clarke's (2006) six-stage thematic analysis technique. As a result of the findings of both investigations, it became clear that practitioners needed to have a deeper grasp of the strategy and specialised abilities to overcome the problems. The proficiency of practitioners was crucial because it may impact the desire of their students in acquiring the skills and comprehending the subject matter.

INTRODUCTION

English for Specific Academic Purposes, or ESEP (English for Specific Engineering Academic Purposes) as it is known in this research, involves helping students improve their language skills so that they may succeed in school. For fluency in everyday, casual contexts, both emphasise language in context rather than ESL grammar and procedures. Since the focus affects teaching methods, ESAP must be more practically diverse, taking into account elements of language and cognition as well as socio-cultural or psychological factors [1]. There are corresponding demands for educational techniques that are compatible with the advancements in mechanical engineering [2]. Accordingly, ESEP facilitation, despite its widespread diffusion, is centred on the peculiarity [3, 4] of technical and engineering educational environments. Due to stakeholders' demands, it is necessary for practitioners to have a solid grasp of the language. Engineering education has evolved at a breakneck speed during the last two decades [5], and practitioners must stay up. We need to make substantial changes in the current educational approach since it plays a big role in preparing students for the workplace and environment in which they will work in the future [6–7]. The practitioners need to be able to evaluate the requirements of students, build curricula, choose and use suitable resources for particular discipline topics and activities [8-10]. When it comes to deciding on curriculum, teachers have the issue of teaching foreign topics and engaging with subject experts, as Shatrova points out [11]. A practitioner's "subject knowledge issue" [12], coupled with their need to overcome a "inferiority complex," has resulted in their feeling conflict in their desire to prove themselves "intellectually competent" of dealing with the material. There is little mention of ESEP practitioners' problems at Malaysian focus institutions despite the increased demand on practitioners to facilitate English medium subject mastery. As a result of this research, it is necessary to investigate the instructional techniques of ESEP practitioners in the local technical and engineering universities. We want to know what experts think about the problems and competences that practitioners need in order to facilitate ESEP. We also want the practitioners' perspective on how they may overcome such challenges.

2. LITERATURE REVIEWS

2.1. The critical EAP theory

It is Henri Giroux's critique of practitioners' dissatisfaction with their existing status quo [15] that informs the Critical EAP theory proposed by Benesch [14]. Educators who are frustrated with the status quo and want to make a difference in the lives of their students are the target audience for this theory's "call to arms" [14]. A key component of the theory's argument is on the role that teaching plays in helping students create their own sense of self [16]. So that "various pedagogies develop diverse sorts of knowledge and learners' identities," this is to emphasise. As a result, it is crucial that ESEP

practitioners recognise the influence of their abilities on their learners' sense of self. Furthermore, the use of technical and engineering academic activities, texts, and material in the development of academic language has given ESEP a very pragmatic approach. Because of the pragmatic nature of ESEP, which emphasises ongoing needs assessments [17], ESEP practitioners have little choice but to adhere to what [18] describes as a "approach to language teaching in which all decisions regarding content and method are based on the learner's reason for learning. " As a result of their strict adherence to industry standards, ESEP professionals are no longer referred to as "the butlers" [14]. According to the pragmatism, the job of ESEP practitioners is to "perpetuate a subservient position to content discipline practitioners" [14]. For this reason, combined with the "primacy and narrowness of faculty judgments around ESL learners' performance," educators in ESEP programmes are expected to never challenge the usefulness of their instructional strategies. Because of this, the theory encourages ESEP practitioners to be critical rather than passively accepting while teaching disciplinary material [20].

2.2. The specifity of ESEP

Three issues arise when it comes to the specificity of ESEP, which must be tailored to the content fields. Because there is no convention to give a ready-made guidance, ESEP practitioners must adapt to new domains of knowledge, and their standing as ELTs is shifting. As a first step, there are concerns about 'authenticity' because of the absence of standardisation of ready-to-use ESEP materials. ESEP practitioners have been left in the dark about whether or not they should employ genuine or inauthentic materials due to a lack of clear guidelines. Before resources can be changed, practitioners must determine what they are going to utilise them for. The conclusion is based on basic principles and the answer is not definitive. Secondly, practitioners who have just general English (GE) training have a challenge when it comes to students' understanding of the subject matter. GE calls for the use of ready-made materials and functional literacy in social situations, but ESEP necessitates the acquisition of engineering-specific knowledge and language [21]. Because of the uniqueness of ESEP practitioners' comprehension of the subject matter, as well as the information ESEP practitioners require, the hurdles are many. So that the ESEP practitioners can be advisors and facilitators for learners' communicative practises, as well as collaborators and researchers in the materials they have provided for learners' learning, ESEP practitioners need both content knowledge and formal schema knowledge in the engineering field. As these professions demand a significant amount of time and effort, practitioners may need to adjust their mindset in order to ensure effective learning. Teachers' unwillingness to leave their comfort zones in Literature and social English [18] is to blame for students' difficulty grasping the subject matter. In addition, they have a sense of inferiority since their role "changes from being a topic to a service industry for other specialisms" [18]. However, many people have experienced this. As a result, working closely with subject matter experts is an absolute must. According to Savaş, practitioners of the ESEP are professionals whose values go beyond the educational ones. As educators, our practitioners must be open to new ideas and concepts, eager to pick up new skills, capable of working effectively in a group, and critical thinkers. A few other duties that fall to ESEP teachers include making sure their courses are grounded in real-world situations, using genuine resources to enhance student understanding of the language they're working with, and designing classrooms that prioritise the needs of the students themselves. Professional values are expected to be included by practitioners in engineering-related jobs, particularly when it comes to the communication of learners [7]. Additionally, Bracaj believes that practitioners should be able to include their own personal values and beliefs into their work, which is consistent with the ESAP literature [9]. To put it another way, ESEP practitioners' duties have grown with certain values or attitudes linked to them, beyond from teaching, supplying resources, establishing a course curriculum and so on as described in the prior studies. Because the nature of students who are already in their area of study, have a well-developed vocabulary, and are motivated by their desire to learn, Mishra details the values in the roles along with ESEP's change from andragogy to pedagogy [25]. For these students, an andragogical approach is required, rather than the pedagogical model's prescribed one [26], which differs in terms of their qualifications and passion for teaching, knowledge of recent developments in specific fields, skill and patience in developing students' skills, engagement in research and publication works to create a classroom focused on learners, recognition as

language specialists within a specific field, and application of t When it comes to ESEP, the word "practitioners," rather than "instructors," was used because of the program's wide range of duties and responsibilities. More than just pedagogical knowledge and abilities, ESEP practitioners need to broaden their practises and values in light of the needs and expectations of their learners. Before individual ESEP practitioners' competence can be established, it is necessary to investigate the obstacles encountered by ESEP practitioners.

2.3. ESEP practitioners' competencies

For many years, the terms "competency" and "set of desirable behaviours" have been used interchangeably. Competence is defined by Woollacott in three ways: Implicit or explicit assessment of an individual's ability to do certain activities; it implies a value judgement on the ability, capacity, or trait in comparison to some other measurable criterion. As a result, the term "competence" in this research encompasses personality attributes rather than merely focusing on overall achievement-oriented behaviour. The experts' and ESEP practitioners' opinions are thus gathered in order to establish the requisite competencies for ESEP practitioners based on the problems previously stated. That's because the people who are considered experts and practitioners are the ones who have really dealt with the difficulties. Many people think that the instructors of ESL engineering students know best what is needed for them. Malaysian teacher standards principles (values, knowledge, and skills) are used in this research to establish the competences for ESEP practitioners in Malaysian engineering higher education settings

RESEARCH METHOD

The study's goal was achieved via the use of both quantitative and qualitative methods of inquiry. Participants in the research came from two distinct groups: ESAP/ESEP specialists and practitioners from four different public tertiary institutes of technology and engineering. A series of interviews with 14 specialists was the first step in the data collecting procedure. Semi-structured interview questions generated the specialists' professional views. The practitioners were then asked to self-evaluate their abilities using an online survey. The three MTS concepts were included into a five-Likert scale of significance questionnaire that was made accessible online. There were 42 ESEP professionals who volunteered their time to take part. In order to confirm the instruments' validity and reliability, they were subjected to a series of rigorous testing. The qualitative data was analysed using Braun and Clarke's six-stage approach of thematic analysis (TA) [31] and Atlas.ti to facilitate the presenting of data. Data was analysed by averaging the three principles' mean ratings.

4. RESULLS AND DISCUSSION

Three key themes emerged from the qualitative investigation, as shown in Table 1, which included various problems. To begin with, ESEP practitioners expressed concerns about the absence of guidelines for particular professional values necessary in ESEP learning and facilitating in technical and engineering fields. The majority of the experts drew linkages between ESEP practitioners' professional values and the soft skills they required. Professional qualities are also emphasised in order to meet the demands of students taking ESEP classes (Learner Focus). It was well-known that their students had already picked their topic of study (engineering), had schemata for the language, and were motivated by a desire to learn. An andragogy technique was proposed by the specialists in accordance with the literature. As noted previously, the andragogical approach uses a variety of educational approaches and practises. ESEP duties have increased in definitions and practises in response to the demands of its learners and what is required to provide ESEP courses, experts agreed with Javid [27] on the diverse character of ESEP, which has given the word 'practitioners.'

Table 1. The challenges in facilitating ESEP

Themes/ Challenges	ESEP Professional Values	Knowledge & Understanding of ESEP	Learning & Facilitating ESEP Skills
Codes	- Soft Skills - Learner Focus (andragogy) - Practitioners	- Knowledge of Technical - General English (GE) vs Specific (ESP)	- Engineering Academic Context - Workplace Requirement

Learning and teaching in certain fields, such as in technical and engineering education, need knowledge and expertise. The majority of the experts agreed that technical expertise and understanding were critical. Material specificity and authenticity, the difficulty in comprehending the subject matter, and the expertise ESEP practitioners require are the main hurdles. So, ESEP professionals were instructed to look at learning as a whole. Students may be less motivated to study if teachers have a tough time implementing the curriculum. Because of this, practitioners' ability

to pick resources 'that fit their own needs' is critical. ESEP practitioners, on the other hand, have the authority to develop and write syllabuses and materials, while GE educators have no say in the matter. Practitioners might benefit from having some background in engineering. Despite this, the experts expressed worry about the level of ESEP technical expertise and comprehension needed by the program's participants. ESEP learning and teaching skills were seen as a complement to the other two categories. The experts acknowledged that ESEP practitioners required to be able to relate their learning and facilitating techniques to engineering academic settings and to accommodate the needs of ESL engineering learners in the workforce. Even more interestingly, the relevance of this skill reflected experts' views on the fact that the learners were adults who were already fluent in the language and motivated by their desire to acquire technical and engineering-related topics [25]. A change in ESEP learning and facilitating to an andragogical approach was clearly evident from this. According to Benesch [14], ESEP practitioners encounter considerable problems and are urged to be aware of the detrimental impact on classroom practises that these issues may have. When it comes to MTS's goal of promoting good academic practises based on national standards, the hurdles might actually help practitioners rise to the top of the field as language specialists if they're approached strategically. Data from quantitative and qualitative assessments show that practitioners' ability to meet the stated difficulties relies heavily on their grasp of ESEP knowledge and understanding, as shown in Table 2.

Table 2. Mean scores for each principle of the competency

Competency	Principle I ESEP Professional Values	Principle II Knowledge & Understanding	Principle III ESEP Learning & Facilitating Skills
Mean Scores	0.754	0.795	0.794

When comparing ESEP knowledge and comprehension to other competencies, the practitioners felt that ESEP knowledge and understanding was the most important. They had difficulty producing materials for ESEP learning and teaching practises due to a lack of technical expertise and comprehension, according to the qualitative results of the study. On the basis of these claims, ESL practitioners were determined to be unable to teach language and communication skills in engineering domains because they lack technical expertise and comprehension. According to Hutchinson and Waters [18, 21], ESEP practitioners were unsure about how to use ready-made ESEP teaching and learning resources. ESEP's uniqueness was important since each professional and academic discourse had a range of distinct literacies.. Text analysis studies found that there were differences in the substance, subjects, and vocabulary of engineering professional discourses [4]. Additionally, it was necessary to have a firm grasp of ESEP in order to tell GE from ESEP. Due to the fact that GE's goals are different and the language skills it gives are more widespread, this was a need. Knowledge and understanding of ESEP was clearly shown to be the most crucial factor for ESEP practitioners' ability to overcome most of the obstacles highlighted in the quantitative data. To overcome their "uncomfortability" in grasping the "unpredictable and unknown" technical and engineering materials, practitioners considered that learning about engineering academic and professional requirements would be beneficial to them.

CONCLUSION

However, the ESL ESEP practitioners' issues were similar to literature, but not much emphasis was made to specifying the competences necessary for certain academic fields. In order to effectively teach and facilitate ESEP, ESEP practitioners must have particular skills. In order to categorise the difficulties faced by practitioners, the researchers adopted the three MTS competency principles. Insufficient standards for ESEP practitioners' special professional values, technical knowledge and understanding, and ESEP-specific learning and facilitation abilities, say experts, are to blame for the difficulties. As a result, practitioners rated ESEP knowledge and comprehension as the most important ability in solving most of the issues listed. A lack of ESEP practitioners' ability to cope with the problems and their major impact on learners, and to support the content matter, was reaffirmed by the results ESEP abilities were also identified as a need, and this information could be used to advise practitioners about continuing education opportunities that would help elevate their prestige and recognition as language experts in technical and engineering fields. It also emphasised the need of defining the credentials of ESEP practitioners, as opposed to other GE practitioners, by the local quality authorities. In

addition, the principles might assist teachers in developing appropriate communicative activities that focus on the learners' goals for acquiring the language and abilities. This study's findings cannot be generalised, but they shed light on the most pressing issues in ELT for engineering students. It is critical that all stakeholders, especially ESEP practitioners, discuss and share ideas and practises in order to satisfy the expectations of the engineering workforce in the age of global mobility. Engendering a stronger sense of interdisciplinarity between the fields of engineering and language education requires the active participation of practitioners as well as engineering academics and workplaces. Since professional skills and work-integrated curriculum are becoming more important in the area of engineering, epistemological research focusing on meeting the academic and career preparation demands of ESL engineering students are becoming increasingly important.

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