



**DESIGN AND DEVELOPMENT OF A PRONUNCIATION  
SELF-ASSESSMENT CHECKLIST FOR AIRCRAFT ENGINEERING  
TECHNOLOGY STUDENTS IN AN ESL HIGHER EDUCATION CONTEXT**

**By**

**NURUL AIN BT. MD ZULKIFLY**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

**March 2024**

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## DEDICATION

*This work is dedicated to my husband, our parents, our son and our family members.*



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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**March 2024**

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**Faculty : Modern Languages and Communication**

There is increasing interest in the use of formative self-assessment in the language learning classroom. This thesis presents the design and development of a self-assessment checklist for pronunciation intended as a useful pedagogical tool for use by Bachelor of Aircraft Engineering Technology (BAET) students in an ESL Higher Education context in a private university in Malaysia. The emphasis on pronunciation arises from the importance attached to communications in minimising risk and maximising safety in the aviation industry, where most BAET students will work after graduating, and from the associated priority students and teachers give to pronunciation. Self-assessment is needed for students to become independent learners, a skill which they will need for developing themselves in their future careers. Self-assessment in this study is used in the sense of students developing their understanding of how to self-assess their pronunciation as opposed to self-grading their pronunciation.

A development research approach was adopted, consisting of three phases: design, calibration, and evaluation of the usefulness of the checklist. The approach was chosen to meet the research objectives which were: (1) to design a pronunciation self-assessment checklist, (2) to evaluate the pronunciation self-assessment checklist based on the feedback from teachers and students, and (3) to evaluate the usefulness of the pronunciation self-assessment checklist.

The checklist design was based on the literature review, with changes made after comments from teachers and students in addition to expert validation. In the calibration phase, the checklist was trialled with students (N=50), after which semi-structured interviews were conducted with ten students and two teachers to establish whether the checklist and the guidance it contained were sufficiently clear, and to investigate the feasibility of using the self-assessment checklist in the classroom situation, as measured by the reactions of students and teachers. In the third and final phase, the usefulness of the checklist was evaluated by administering questionnaires developed for this study and validated by experts to students and teachers who had participated in trialling the checklist. Usefulness was measured in terms of the impact, practicality, reliability and validity of the self-assessment checklist. Further expert validation was incorporated into the final design of the checklist.

Overall, the teachers found the checklist to be very useful, as did students (n=20) who returned valid questionnaires. There was evidence that some students had understood and were able to implement the self-assessment cycle; additionally, there was evidence of both knowledge and regulation of cognition. Some students wanted more explanation of the checklist, or wanted it to be simpler, while others suggested possible

ways of embedding pronunciation teaching as well as the checklist into the Aviation English curriculum. Further work is needed to ensure effective implementation of the checklist in the classroom. The thesis offers a novel approach to self-assessment of pronunciation in an ESL context, focusing on students' understanding of their own learning strategies, and highlights the benefits of a rigorous approach by teachers to the use of checklists.

**Keywords:** Self-Assessment, ESL/EFL, Pronunciation, Aircraft Engineering Technology Students

**SDG:** GOAL 4: Quality Education

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**REKABENTUK DAN PEMBANGUNAN SENARAI SEMAK PENILAIAN  
KENDIRI (SEBUTAN) UNTUK MAHASISWA TEKNOLOGI  
KEJURUTERAAN PESAWAT DALAM KONTEKS PENDIDIKAN TINGGI  
BAHASA INGGERIS SEBAGAI BAHASA KEDUA**

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Terdapat peningkatan minat dalam penggunaan penilaian sendiri formatif dalam kelas pembelajaran Bahasa Inggeris. Tesis ini membentangkan reka bentuk dan pembangunan senarai semak penilaian sendiri untuk sebutan yang bertujuan sebagai alat pedagogi untuk digunakan oleh pelajar Ijazah Sarjana Muda Teknologi Kejuruteraan Pesawat Terbang dalam konteks Pendidikan Tinggi Bahasa Inggeris sebagai bahasa kedua di salah sebuah universiti swasta di Malaysia. Penekanan pada sebutan timbul daripada kepentingan yang dilampirkan kepada komunikasi dalam meminimumkan risiko dan memaksimumkan keselamatan dalam industri penerbangan, di mana kebanyakan pelajar akan bekerja selepas tamat pengajian, dan keutamaan yang berkaitan diberikan oleh pelajar dan guru adalah berkaitan dengan sebutan. Penilaian sendiri diperlukan untuk pelajar menjadi lebih berdikari, kemahiran yang mereka perlukan untuk membangunkan diri mereka dalam kerjaya pada masa depan mereka. Penilaian sendiri dalam kajian ini digunakan dalam erti kata pelajar

mengembangkan pemahaman mereka tentang cara menilai sendiri sebutan mereka berbanding dengan menilai sendiri sebutan mereka.

Pendekatan penyelidikan pembangunan telah diterima pakai, terdiri daripada tiga fasa: reka bentuk, penentukuran, dan penilaian kebergunaan senarai semak. Pendekatan ini dipilih untuk memenuhi objektif kajian iaitu: (1) reka bentuk senarai semak penilaian sendiri sebutan, (2) menilai senarai semak penilaian sendiri sebutan berdasarkan maklum balas guru dan pelajar, dan (3) menilai kebergunaan senarai semak penilaian sendiri sebutan.

Reka bentuk senarai semak adalah berdasarkan kajian literatur, dengan perubahan dibuat selepas komen daripada guru dan pelajar di samping pengesahan pakar. Dalam fasa penentukuran, senarai semak telah diuji dengan pelajar (N=50), selepas itu temu bual separa berstruktur dijalankan dengan sepuluh pelajar dan dua guru untuk menentukan sama ada senarai semak dan panduan yang terkandung di dalamnya cukup jelas, dan untuk menyiasat kebolehlaksanaan dengan menggunakan senarai semak penilaian sendiri dalam situasi bilik darjah, seperti yang diukur oleh reaksi pelajar dan guru. Pada fasa ketiga dan terakhir, kebergunaan senarai semak telah dinilai dengan mentadbir soal selidik yang dibangunkan untuk kajian ini dan disahkan oleh pakar kepada pelajar dan guru yang telah mengambil bahagian dalam percubaan senarai semak tersebut. Kebergunaan diukur dari segi kesan, kepraktisan, kebolehpercayaan dan kesahan senarai semak penilaian sendiri. Pengesahan pakar selanjutnya telah dimasukkan ke dalam reka bentuk akhir senarai semak.

Secara keseluruhannya, guru mendapati senarai semak itu sangat berguna, begitu juga dengan pelajar (n=20) yang memulangkan soal selidik yang sah. Terdapat bukti bahawa beberapa pelajar telah memahami dan dapat melaksanakan kitaran penilaian sendiri; tambahan, terdapat bukti kedua-dua pengetahuan dan peraturan kognisi. Sesetengah pelajar mahukan lebih banyak penjelasan tentang senarai semak itu, atau mahu ia lebih ringkas, manakala yang lain mencadangkan untuk pengajaran sebutan serta senarai semak dimasukkan ke dalam kurikulum Bahasa Inggeris berteraskan penerbangan. Kajian seterusnya diperlukan untuk memastikan pelaksanaan senarai semak yang berkesan di dalam kelas. Tesis ini menawarkan pendekatan baru untuk penilaian sendiri sebutan dalam konteks Bahasa Inggeris sebagai bahasa kedua, memfokuskan pada pemahaman pelajar tentang strategi pembelajaran mereka sendiri, dan menyerlahkan faedah pendekatan yang ketat oleh guru terhadap penggunaan senarai semak.

**Kata Kunci:** Penilaian Kendiri, Bahasa Inggeris sebagai bahasa kedua/ Bahasa Inggeris sebagai bahasa asing, pelajar Teknologi Kejuruteraan Pesawat Terbang

**SDG:** MATLAMAT 4: Pendidikan Berkualiti

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## LIST OF ABBREVIATIONS

ADDIE	Analysis, Design, Development, Implementation, and Evaluation
ALM	Audiolingual Method
AMM	Aircraft Maintenance Manual
AMT	Aircraft Maintenance Technician
ATC	Air Traffic Controller
BAET	Bachelor of Aircraft Engineering Technology
CAAM	Civil Aviation Authority of Malaysia
CEFR	Common European Framework of Reference for Languages
CF	Corrective Feedback
CLT	Communicative Language Teaching
CPD	Continuing Professional Development
CR ADMIN	Checklist Review Administration
CR FREQ	Frequency Scale
CR GUID	Checklist Review Guidance
CR ITEM	Checklist Review Items
CR LAYOUT	Checklist Review Layout
CR PRO	Checklist Review Pronunciation
CR SEC	Checklist Review Sections
DCAM	Department of Civil Aviation Malaysia
EAP	English for Academic Purposes
EFL	English as a Foreign Language
ESL	English as a Second Language
ESP	English for Specific Purposes
IATA	International Air Transport Association

ICAO	International Civil Aviation Organization
IELTS	International English Language Testing System
IPA	International Phonetic Alphabet
KC	Knowledge of Cognition
L1	First Language
L2	Second Language
L3	Third Language
MAEP	Manual of American English Pronunciation
ME	Metacognitive experiences
OET	Occupational English Test
RC	Regulation of Cognition
RP	Received Pronunciation
SA	Self-assessment
SAPUR	Purpose of Self-assessment
SAST	Standards
SAT	Self-Assessment Tool
SILL	Strategy Inventory for Language Learning
SR	Student Role
SUSA	Students' Understanding of Purpose and Process of Self-assessment
TOEFL	Test of English as a Foreign Language
TR	Teacher Role
TU	Teachers' Use of SA
UniKL	Universiti Kuala Lumpur

# CHAPTER 1

## INTRODUCTION

### 1.1 Preamble

The purpose of this development research study was to develop a pedagogical tool for Bachelor of Aircraft Engineering Technology (BAET) students to enable them to develop their understanding of how to self-assess their pronunciation. The study was conducted in a private university in Malaysia which specializes in Aircraft Maintenance Technology and offers courses in Aviation English which are undertaken mainly by Malaysian students. All technical courses are delivered in an English as a Second Language (ESL) environment.

This chapter introduces the development research approach, followed by the context and background of the study that influenced the choice of approach. Then, the researcher's positionality is briefly explained. This is followed by the problem statement which identifies the practical problem as well as gaps in the literature related to assessment and self-assessment of pronunciation. After this, the research rationale, the research aim, objectives, and questions are presented. The theoretical framework of self-assessment within a metacognitive approach is then explained, and an overview of the research process is given. Key terms are defined before the chapter concludes with the organization of the thesis.

### 1.2 Development Research

Development research has been associated with a variety of activities in the field of teaching and learning (Van den Akker, 1999, pp. 4-5). It “directly pertains to

instructional development”, including the development and validation of a specific instrument to address a problem in a particular context (Richey & Klein, 2005, p. 24). Thus, it can meet teachers’ and students’ needs for an instructional product like the checklist in this present study while ensuring the product is based on data gathered from practice as well as theory.

Development studies focused on a context-specific instructional tool often have three or four phases (Richey & Klein, 2005, p. 26). Typical phases in development research can include some or all of the following: design and development, evaluation, validation, model development, model use and model evaluation (Richey & Klein, 2005). The overall process may be iterative, with repetitions of some or all of the phases (Fulcher & Davidson, 2007, p. 84). The process can thus be visualised in a variety of ways, as illustrated in Appendix T. In this present thesis, three phases are used: design, calibration, and evaluation.

Whilst the selected development research approach is described and justified in full in the methodology chapter, it is worth mentioning here that its distinctive features relevant to this present study include the involvement of practitioners and users in repeated prototyping (Van den Akker, 1999, pp. 8-9; Visscher-Voerman et al., 1999, p. 16), and an emphasis on formative evaluation of the product (Van den Akker, 1999, p. 10). The involvement of end users in this way is based on the assumption that they are the best judges of the “value of a product and its functionality” (Visscher-Voerman et al., 1999, p. 21).

### 1.3 Contextualisation and Background of the Study

It is asserted that pronunciation is key to effective communication at work; “Pronunciation plays a vital part in employability” (Shak et al., 2016, p. 25). Many studies have stated that Malaysian employers report a lack of English proficiency among the reasons for graduate unemployment (Cheong et al., 2016; Nadarajah, 2021; Nair et al., 2012; Sarudin et al., 2013; Singh, G. & Singh, S., 2008; Ting et al., 2017). Shak et al. (2016) mentioned that for university students, clear pronunciation is not only important for oral coursework and assessments, but also for “job interviews, proposal presentations, negotiations and other professional instructions” as they move from university to employment (p. 25). Additionally, in an ESL higher education environment like that of the university in this present study, students from diverse linguistic backgrounds need to be able to understand each other as well as communicate successfully with their lecturers. There are 18 first languages spoken in Malaysia in addition to Bahasa Melayu, the language spoken by the majority of the population (Ling, 2020; Rashid et al., 2017). The student intake at the research site in a particular year may include international students as well as Malaysian students, who may converse in their L1 during break times, as mentioned by Kashinathan and Abdul Aziz (2022). Differences among Malaysian student speakers of English, depending on whether English is their L1, L2 or L3, are mentioned by Pillai and Ong (2018, p. 154). Moreover, the quality of English teaching in primary and secondary schools is variable across the country (Kepol. 2017; Rashid et al., 2017), which means that there can be wide differences in English speaking proficiency among students arriving at the university. Burns (2003) summed up the need for clear pronunciation in both employment and the classroom, saying “When communicating in the English language, it is important that the speaker can be understood by the listener and clear

pronunciation helps to convey the message even if there are some problems with vocabulary and grammar” (Burns, 2003, p. 5).

It is worth explaining a little more about the particular teaching and learning context of English in Malaysian higher education because in practice it tends to be difficult to distinguish between ESP, English as a Second Language (ESL) and English as a Foreign Language (EFL) in the design and delivery of an English curriculum. Malaysia has historically considered itself an ESL country, and indeed continues to do so (Aziz & Kashinathan, 2021). However, changes over time in the perceived status of English compared with Bahasa Malaysia as the language of national identity has led to a situation in which the teaching of English in higher education institutions has become closer to TEFL (Ravindran et al., 2022, p. 2). Additionally, a number of students are Chinese or from other countries, and for them, English is definitely a foreign language (Ravindran et al., 2022, p. 2). The limited use of English in the classroom and workplace is confirmed by Hashim and Yunus (2018) who state that in reality English is used in situations which demand it, for example presentations or reports, but that Bahasa Malaysia is used at other times (p. 209).

University students undertaking courses which require specialised knowledge of English for their studies and future careers undertake an ESP course, which varies in content according to their chosen area and which therefore relies heavily on analysis of their particular needs, as indicated by Flowerdew (2014). According to Johns (2014), who cites Dudley-Evans and St John (1998), this means that an ESP practitioner may fulfil a number of roles in addition to teacher, such as curriculum and materials designer (p. 19). In designing and teaching an ESP course, a teacher may

have to address students' needs in terms of English for Academic Purposes (EAP), for instance primarily reading or writing, in order for students to be able to succeed in their specialised academic studies, while simultaneously addressing their needs for meeting occupational requirements (Flowerdew, 2014, p. 337). As Feak (2014) mentions, writing skills have tended to dominate ESP curricula due to the direct link between those skills and professional success (p. 34). However, speaking skills have added importance in occupations where interactions with speakers from different linguistic backgrounds have become more commonplace; in situations where a variety of L1 speakers are communicating, it is the speaker's responsibility to ensure their speech can be understood (Feak, 2014, p. 43).

For BAET students, English proficiency is especially significant. Many BAET students seek to work as aircraft maintenance technicians (AMTs), while others will pursue various careers in the aviation industry ranging from systems engineer to human resources manager. Although they all study in an ESL environment at their technical university, those who wish to become aircraft maintenance technicians are required to achieve a specified level of proficiency on a rating scale determined by the International Civil Aviation Organization (ICAO). The national aviation authority of Malaysia, the Civil Aviation Authority of Malaysia (CAAM), has made language proficiency rating mandatory for aircraft maintenance personnel (DCAM, 2014).

In 2012, the Aviation English lecturers gained experience with the national aviation authority in using the ICAO Language Proficiency Rating Scale to assess the English of aircraft traffic controllers. As a result of this assessment experience, and the Malaysian national aviation authority requirement for assessment by the university of

AMT students' language proficiency, the lecturers decided to introduce the ICAO standard of English language proficiency to Bachelor of Aircraft Engineering Technology (BAET) students. It was important for students to know the standard they would be expected to achieve to work in the industry, but most of the teachers felt that giving feedback to students based strictly on the standards could discourage students and therefore started to consider alternative assessment frameworks. After their initial experience of using the ICAO scale when teaching Aviation English classes, teachers and some of their students were asked whether there was anything they would like to be given more attention. The six Aviation English lecturers who had previously been involved in rating aircraft traffic controllers and introducing students to the standards using the ICAO scale stated that students could gain from a greater focus on pronunciation and a number of students similarly expressed a need to focus more on their pronunciation. The emphasis on pronunciation arises from the importance attached to communications in minimising risk and maximising safety in the aviation industry, which is where most of our students will work after graduating. The aviation industry originally focused on communication between airline pilots and air traffic controllers, using a specific and restricted code of communication. This was extended to improve communication in non-routine situations as well as less formal exchanges between airline pilots and air traffic controllers, and thereafter to air maintenance technicians who need to work in an international environment in which English was typically the lingua franca. The ICAO Language Proficiency Rating Scale was, and still is, the only rating scale specific to the aviation industry. As the literature review indicates, in comparison to other rating scales, the ICAO highlights the importance of clear pronunciation, mainly for reasons of safety. It was therefore decided to proceed with developing a pedagogical tool related to pronunciation.

In 2014, CAAM took the initiative to adopt and amend the requirements set by the ICAO for English language proficiency. This fulfilled the specific maintenance-related requirements for Malaysian aircraft maintenance personnel and addressed the perceived decline in overall levels of English language proficiency among younger aircraft maintenance personnel compared with more senior staff (DCAM, 2014, para. 2.2). Situations where speaking skills, and hence pronunciation, were needed included “briefing, announcements, instructions, discussions, shift hand-over communication, communication with ATC, pilots and other ground personnel” (DCAM, 2014, para. 2.4). The ICAO Language Proficiency Rating Scale would be adopted as a general guide for competency levels, with Level 4 being the minimum required level for the granting or renewal of an Aircraft Maintenance License (see Appendix R for ICAO speaking scale levels and descriptors).

CAAM also specified that assessments of English language proficiency should be conducted by authorised organisations, including listed Approved Training Organisations for aviation maintenance, one of which is the university where this present research was conducted (CAAM, 2021). The university needed to look at how it could develop the English component of the BAET degree, in line with the statement by White, Kroes and Watson (2000, p. 2) that “a successful AMT training program relies on a system of continuous quality improvement”. The university decided that BAET students should be assessed using the framework which was already available for pilots and Air Traffic Controllers (ATCs). There were two main factors that led to this decision: (i) the lack of suitable and available alternative tests, and (ii) the emergence of high-stakes English testing for aircraft maintenance technicians, following the earlier introduction of mandatory standardised high-stakes testing for

pilots and ATCs. The Aviation English lecturers at the university therefore started to assess BAET students' speaking skills with the ICAO Language Proficiency Rating Scale.

There were two areas of difficulty, the first of which concerned the course content and assignments. Since the Aviation English courses were intended for a range of occupations in the industry, the overall course content and speaking skills assignments were broader than those maximally relevant for aircraft maintenance technicians alone. As such, the course does not reflect the highly specialized aviation discourse as a form of English for Specific Purposes (ESP) described by Moder (2014), although the requirement for "comprehensible pronunciation, intelligible fluency and delivery" in typical employment situations remains (p. 228). Moreover, few studies had investigated the language proficiency of aircraft maintenance personnel (Drury et al., 2002; Drury and Ma, 2003; Drury and Ma, 2004; Drury et al., 2005) as compared to pilots and ATCs (Alderson, 2009; Alderson, 2011; Cookson, 2011; Farris et al., 2008; Kim & Elder, 2009, 2011; Matthews, 2004; Moder & Halleck, 2009; Tajima, 2004). The final report to the Federal Aviation Administration regarding the language proficiency of aircraft maintenance personnel (Drury et al., 2005) found that limited English on the part of an aircraft maintenance technician or inspector was responsible for between four and ten incidents a year (p. 85). Early detection and correction of language errors was recommended, along with "Regular testing of AMT's [aircraft maintenance technician] English ability, task assignments recognizing the AMT's knowledge of English and an atmosphere of freedom to ask for language assistance" (Drury et al., 2005, p.95).

The second area of difficulty was the time available for the Aviation English component of the BAET degree; a two-hour session each week for three semesters, each lasting 18 weeks. The time was just sufficient within the aviation-related syllabus to incorporate classroom activities in the four language skills of reading, writing, listening and speaking, all deemed equally important for aircraft maintenance personnel (DCAM, 2014, para. 2.4). The time constraints of the course, along with the general shift towards a more constructivist and learner-centred approach in language teaching (Kaufman, 2004) and the potential for self-assessment in language learning (Jamrus & Razali, 2019, p. 70), led the Aviation English lecturers to feel that students would benefit from the introduction of self-assessment. Self-assessment is “among the main learner-centered practices which would potentially be beneficial in testing as well as learning processes” (Hosseini & Nimehchisalem, 2021, p. 857).

In view of the diversity of spoken language proficiency among students and the likely benefits of self-assessment, the purpose of the pedagogical tool was to enable students to develop their understanding of how to self-assess their pronunciation so that they could identify and attend to their individual needs for improvement. Some typical difficulties with students’ English pronunciation are described in Appendix S. At the same time, it sought to address students’ expressed dislike of using audio- or video-recordings, as reported to their teachers, to detect their mistakes and improve their pronunciation. The researcher realised that simply urging them to use these strategies was more likely to increase resistance than to bring about change and so decided to use self-assessment to encourage them to take ownership of their learning in terms of the strategies they used. If students considered which learning strategies they used and how well those strategies were working in terms of helping them improve their

pronunciation, they would have the opportunity to adapt their strategies, if not to listen to recordings, then perhaps to try alternatives.

Self-assessment checklists have been produced for language learning within the Common European Framework of Reference CEFR European Language Portfolio (Little & Perclová, n.d.), which has been adopted in Malaysia (Ministry of Education, 2013). This suggests there is support for the potential usefulness of checklists associated with self-assessment. In view of the priority students and teachers gave to pronunciation and the time constraints of the course more generally, the present study concentrates on developing a useful pedagogical tool in the form of a self-assessment checklist for pronunciation.

#### **1.4 Researcher's Positionality**

As Wellington et al. (2005) stated, "It is impossible to take the researcher out of any type of research or of any stage of the research process" (p. 21) and therefore the researcher explicitly addresses her positionality as a researcher in connection with this project. She is one of a team of six lecturers who teach Aviation English to BAET students at a private technical university in Malaysia. Like most of her colleagues, she is an ESL speaker working in an ESL environment. This present study grew out of team efforts over several years to identify appropriate improvements in teaching and assessment of students' English. Self-assessment was seen as the next area to develop, while pronunciation was seen as a relatively weak area of the speaking skill, which in turn was seen as weaker than the other language skills. This study gave the researcher the opportunity to explore the self-assessment of pronunciation and to develop a pedagogical tool in the form of a self-assessment pronunciation checklist for students.

This led the researcher to consider her position as an insider, not only as a member of a teaching team, but as member of staff with responsibility to the employing university and as someone with a pre-existing teacher-student relationship with some of the participants. Although her understanding of the cultural and educational situation was mostly shared with all of them, she was aware there was a different power relationship involved when students addressed her formally as ‘Madam’ in class, and that this could especially affect how some student participants might respond.

Being an insider not only facilitated her access to participants, in agreement with Sikes and Potts (2008, p. 3), but also meant that she had real insight into the situation. She hoped that this would help her to contribute to the type of research into real-world classroom-based issues recommended by Rose (2019). However, being an insider can also attract criticism regarding “the extent to which [research] can be considered to be ‘objective’ and hence ‘reliable’ and ‘valid’” from a strictly scientific viewpoint (Sikes & Potts, 2008, p. 7). Rose (2020) states that, during observations, a researcher can take a role on a spectrum that stretches from “detached observer”, perhaps more likely with an outsider, to “complete participant”, an insider role (pp. 95-96). According to Rose, “Positionality...needs to be firmly established before conducting observations” (2020, p. 95), with the researcher deciding the role appropriate to the nature of the research.

Positionality also affects interviews; it can be a source of bias and can be “very difficult...or impossible to avoid” (Rose, 2020, p. 119). The researcher in the present study needs to acknowledge where she is aware that her insider role as a teacher may have influenced some of the interview responses, for example where the teacher-

student power difference caused some, but not all, students to be maybe less critical of the checklist than they could have been.

Additionally, it is very likely that the analysis and interpretation of data is influenced by the researcher's positionality (Bourke, 2014) and indeed "all aspects and stages of the research process" (Holmes, 2020, pp. 2-3). Positionality exerts an influence on the design and processes involved in any research as well as the ways in which ethical considerations are addressed (Clough & Nutbrown, 2012). However, the researcher's experience was that the nature and stage of the research also affected her positionality, so that she was closer to the detached observer end of the spectrum at some points. Especially when reading the literature, she made a conscious effort to read widely and take on board ideas that did not immediately match her knowledge and experience, incorporating some of them, such as developing metacognitive awareness, into the first version of the checklist.

## **1.5 Problem Statement**

Globally, "pronunciation research and pedagogy have long been influenced by two contradictory principles, the nativeness principle and the intelligibility principle" (Levis, 2005, p. 370). The nativeness principle, which stresses accuracy in the sense of sounding as much like a native speaker as possible, has over time given way to the intelligibility principle, which acknowledges that:

anyone participating in international communication needs to be familiar with, and have in their linguistic repertoire for use, as and when appropriate, certain forms (phonological, lexicogrammatical, etc.) that are widely used and widely intelligible across groups of

English speakers from different first language backgrounds. (Jenkins, 2006, p. 161)

A variety of world Englishes is acknowledged; including Indian, Nigerian and Malaysian, among others (Kirkpatrick, 2021), but demands for passenger safety in the aviation industry means that they must be able to understand each other in the work environment. The ICAO rating scale uses the term intelligibility, defining it in terms of the extent to which accent or dialect interferes with understanding (ICAO, 2010).

Malaysian students have already been learning English, in most cases Malaysian English, for some 11 years before starting university. Nonetheless, it is reported that students with poor speaking proficiency make a wide range of pronunciation errors, especially with consonants, both when reading aloud as reported by Shak et al. (2016), and in discussions (Enxhi et al., 2012). Yazid and Zaiyadi (2017) mentioned similar findings from a pronunciation test. In the context of a study using software based on students comparing their pronunciation to that of a native speaker, Uthayakumaran and Kassim (2018) observed that many tertiary level Malaysian students shared these difficulties, although they were “expected to meet a certain accuracy in pronunciation” (p. 84). However, according to Shak et al. (2016), “striving for intelligibility is the main objective rather than aiming for accuracy (to sound like a native speaker)” (p. 27). Thus, it appears there remains a tension between accuracy and intelligibility in terms of what students and teachers are seeking to achieve.

Uthayakumaran and Kassim (2018) attributed some of the difficulties to the mix of different linguistic communities in Malaysia who had created their own version of English pronunciation or ‘Manglish’. “The use of Manglish in daily conversations

among students have [sic] led them to believe that a proper English language is being spoken with correct pronunciation skills” (p. 83). Thus, many students are not aware of their mispronunciations.

Other sources of difficulty have been identified, such as language transfer, or interference, from the phonetics of the learner’s first language (L1), possibly related to orthography in some cases, and phonological awareness (Derakhshan & Karimi, 2015; Sinha et al., 2009). Darmi (2013) mentioned that the “rhythms, and stress patterns of English” were also affected by the L1. Fossilisation of errors can occur, “specially errors in pronunciation” (Touchie, 1986, p. 78). Additional sources of difficulty, among others, include anxiety, for example test-related anxiety and fear of negative evaluation (Miskam & Saidalvi, 2019, p. 3), as well as the role of motivation to learn the language, which is influenced by “the social interaction between the teacher and the learner” (Anjomshoa & Sadighi, 2015, p. 135). Thus, there are many possible reasons why students at a Malaysian university may have problems with English pronunciation.

BAET students need to achieve, maintain and ideally exceed the ICAO mandatory standard of spoken English for part or all of their careers in the aviation industry. In this setting, it is important for teachers to provide feedback on the pronunciation errors that interfere with intelligibility. Corrective feedback from teachers on pronunciation has been shown to increase gains from learning (Lyster et al., 2013, p. 22). “Learners benefit from CF [corrective feedback] on both perception and production of pronunciation” (Couper, 2019, p. 43). Typically, in lessons at the research site, teachers correct the most noticeable pronunciation errors, often using repetition as

close to the error as possible, for example when a student is responding to the teacher or a classmate.

However, it is not appropriate for teachers at the research site to correct student errors during summative oral assessments which count towards their final semester grades. Feedback is delayed until all students have completed their oral assessment and, for students preparing for a summative oral assessment, feedforward anticipation of the likely outcome would perhaps be more useful. Such oral assessments offer students opportunities to anticipate and self-correct likely mispronunciations through the use of self-assessment. Self-assessment in language learning has moved away from its traditional use as “an alternative means to assess learners’ ability” (De Saint Léger, 2009, p. 159) towards more active learner involvement in a developmental learning process and greater motivation and independence (Hosseini & Nimehchisalem, 2021; De Saint Léger, 2009).

In order to overcome the lack of clarity about expectations regarding accuracy and intelligibility, as well as to increase students’ awareness of their mispronunciations and to foster independent learning, it is helpful to provide a set of standards or criteria that explain what students should be aiming for (Andrade et al., 2008; Hosseini & Nimehchisalem, 2021). However, it was not straightforward to identify suitable standards or criteria for assessing pronunciation.

Existing language proficiency rating scales, such as IELTS (International English Language Testing System), TOEFL (Test of English as a Foreign Language), or the ICAO scale in this present study, are sometimes used by teachers to provide guidance

about what students can expect in tests. However, a number of scales have been criticised by raters for “the lack of clear and exact wording of descriptors, the wording inconsistency of descriptors across different levels within a rating scale and the length of descriptors within a level” (Zhong, 2019, p. 144). Harding (2017) provided an example of problems with pronunciation assessment using the Common European Framework of Reference for Languages (CEFR) scale, as identified by a focus group of raters. Firstly, he observed that there was a phonological control scale rather than direct mention of pronunciation and that this scale “has been critiqued by researchers as lacking consistency, explicitness and a clear underlying construct” (p. 16). Some of the raters in Harding’s study highlighted the “difficulty of assessing pronunciation in isolation from other elements of the speaking construct, particularly fluency but also grammar” (p. 26). Some aspects of the descriptors “appeared to be irrelevant to assessing pronunciation” (p. 20) such as the inclusion of “foreign accent” which was considered “anachronistic” (p. 30) and, moreover, was only mentioned at the lower levels and then presumed to disappear as other elements of pronunciation progressed. In view of these issues, a pronunciation self-assessment checklist therefore needs to be as clear as possible in defining the construct and the descriptors.

There are two further important considerations, the first of which is usability or ease of use (Harding, 2017; Zhong, 2019) and is similar to what Bachman and Palmer (1996) term practicality. The second is the broader concept of usefulness, which Bachman and Palmer (1996) describe as consisting of “six test qualities – reliability, construct validity, authenticity, interactiveness, impact and practicality” (p. 17). This is explained further in Section 3.4.5.

It has been proposed that student self-assessment has a number of potential benefits in language learning, including heightened awareness, critical thinking and a more student-centred approach (Dlaska & Krekeler, 2008; Jamrus & Razali, 2019; Salehi & Daryabar, 2014; Trofimovich et al., 2016). However, despite many studies of self-assessment in language learning, there remains a gap regarding pronunciation. From an applied linguistics perspective, the gap includes “research targeting second language (L2) pronunciation, which refers here to the linguistic characteristics underlying listener-based global constructs such as accentedness (nativelikeness) and comprehensibility (ease of understanding) in L2 speech” (Trofimovich et al., 2016, p. 122). Trofimovich et al. (2016) suggest that consideration should be given to researching how to reduce the gap between L2 speakers and native listeners, as well as investigating the relative effectiveness of various ways of developing the skills needed for self-assessment. From the perspective of bringing research and teaching closer together, there is a gap in self-assessment of pronunciation in the classroom, which merits little more than a page in a chapter on assessment of pronunciation in the classroom by Isbell and Sakai (2022).

This gap in the literature combines with the present and future needs of the aviation industry, the students (would-be aircraft maintenance technicians and others), as well as the desire of the English lecturers to enhance the quality of the courses offered by the institution, to create the focus for this study. The development of a pedagogical tool to assist students to self-assess their pronunciation requires a firm foundation with regards to the construct, descriptors, scale, and usefulness of the instrument. The resulting instrument and the learning that occurs as a result of its use will enable students to better prepare for their ICAO pronunciation assessment.

## 1.6 Rationale

This section explains the choice of pronunciation and a pedagogical tool for student self-assessment to address the problem situation. Initially, the motivation for this study was the need for BAET students who were aiming to become aircraft maintenance personnel to achieve a minimum Level 4 standard in English according to the ICAO Language Proficiency Rating Scale as required by the Malaysian national aviation authority. Aviation English lecturers had previously introduced the rating scale to assess students' oral presentations, mock job interviews and group discussions but found that many students continued to make many errors in pronunciation which caused difficulties in understanding. The Malaysian Examination Council high school English examinations that determine entry to university did not specifically include pronunciation in the scoring of these examinations, which was unfortunate in view of the need identified among Malaysian students for improved pronunciation (Shak et al., 2016). It was therefore decided that more focus on pronunciation at the research site could be helpful. Additionally, the teaching of English in Malaysia had been moving towards a more communicative and learner-centred approach for some years (Ming, 2009; Zakaria & Shah, 2019). This meant it was appropriate to explore whether the ICAO Language Proficiency Rating Scale could be used in the classroom in a more learner-centred way.

The importance of pronunciation is not limited to the local situation. As Pennington and Rogerson-Revell (2019) argued, “pronunciation is a much more important and pervasive feature of communication than is generally recognized” and is “the foundation of messaging” (p. 1) in many “real-world contexts of transglobal and international communication” (p. 2). In response to the growth of transnational

communication, multiple varieties of English have developed over time and are increasingly used by non-native speakers with differing linguistic backgrounds (Levis, 2020, p. 320).

The increase in international exchange of personnel has been accompanied by a requirement for equivalency of educational, occupational and language qualifications. In language learning, the Common European Framework of Reference for Languages (CEFR) was developed for use in “planning language learning programmes...language certification...[and] self-directed learning [including] self-assessment” across a range of languages (Council of Europe, 2001, p. 6). The CEFR also aimed to define six levels of language proficiency in positive terms, using ‘can do’ descriptors for communicative language skills which can be used “for continuous teacher-assessment – or self-assessment” (Council of Europe, 2001, p. 228). The CEFR has since been adopted by countries in continents other than Europe, including its introduction in Malaysia in 2013 (Nawai & Said, 2020, p. 29). This offered an opportunity to explore the potential of ‘can do’ descriptors in a self-assessment checklist that would be targeted on pronunciation to suit the context of this present study.

The interest in self-assessment arose from the shift in Malaysian education over some years away from a transmission model and towards a constructivist model of teaching and learning (Neo et al. 2007). One of the stated goals of the Malaysia Education Blueprint 2013 – 2025 (Ministry of Education, 2013) was to develop students with “the ability to independently drive one’s own learning, coupled with the appreciation of the value of lifelong learning” (p. 2-5). This has led to further developments

including the recent introduction of problem-based learning in the institution where this present research was conducted. All these initiatives require a higher level of student independence than the transmission model of teaching and learning. Student independence in turn requires reflection on learning experiences and learning from mistakes; as mentioned in the context of critical thinking and metacognition, “Reflecting on how one carries things out in practice and analyzing mistakes are ways to encourage success and autonomy in learning” (Rivas et al., 2022, p. 6). Self-assessment is one way of implementing reflection in the classroom.

However, many of the students and some of the teachers at the university where this present research was carried out were not familiar with self-assessment. What was needed therefore was a pedagogical tool to support teachers as well as students in developing their understanding and practice of the self-assessment process.

## **1.7 Research Objectives and Questions**

The general objective of this study was to develop and validate a pronunciation self-assessment checklist which Bachelor of Aviation Engineering Technology (BAET) students could use to help improve their English pronunciation. Given this, the following specific objectives were proposed for this study:

1. To develop a student pronunciation self-assessment checklist for Bachelor of Aviation Engineering Technology students
2. To calibrate the student pronunciation self-assessment checklist based on feedback from Aviation English teachers and students
3. To evaluate the usefulness of the student pronunciation self-assessment checklist as perceived by students and teachers

Both qualitative and quantitative methods were used to address the objectives.

### **Research Questions**

In order to achieve the objectives of developing and validating a self-assessment instrument which students can use to help improve their English pronunciation, the study addressed the following research questions:

1. What criteria should be used to design the student pronunciation self-assessment checklist?
2. What are students' and teachers' reactions to the pronunciation self-assessment checklist?
3. How do students and teachers evaluate the usefulness in terms of impact, practicality, reliability and validity of the pronunciation self-assessment checklist?

### **1.8 Theoretical Framework**

The role and uses of self-assessment have changed considerably over the last 50 years as the theories and applications of self-assessment have changed (Panadero et al., 2016a); thus, it is important to be clear about how self-assessment is operationalised in any situation or study. At present, there are several different schools of thought regarding the nature of self-assessment and how it should be carried out, leading one scholar to note that “Without exception, reviews of self-assessment (Sargeant, 2008; Brown & Harris, 2013; Panadero et al., 2016a) call for clearer definitions: What is self-assessment, and what is not?” (Andrade, 2019, p. 1). This present study operationalises self-assessment as formative assessment for learning, in accordance with Andrade and Valtcheva (2009), who state that student self-assessment is about

formative assessment rather than determining or contributing to their final grades (p. 12). The purpose of self-assessment is “to generate feedback that promotes learning and improvements in performance” (Andrade, 2019, p. 2), specifically to generate “feedback for oneself from oneself” (Andrade & Du, 2007, p. 160). Like other forms of feedback, it plays an essential role in formative assessment (Andrade & Valtcheva, 2009, p. 12).

Formative self-assessment reduces the risk of students inflating their grades when those grades do not form part of their final mark (Andrade & Valtcheva, 2009, p. 13). It is important to clarify how the term formative self-assessment is used in this present study, given that there is no single agreed definition of the term. For example, some scholars describe self-assessment as a continuous process with three stages, “self-monitoring, self-evaluation, and identification and implementation of instructional correctives as needed”, a process which includes judgements on performance as well as feedback (McMillan & Hearn, 2008, p. 41). Judgements on performance can take different forms depending on their intended use. According to Andrade and Valtcheva (2009), student self-assessment is aimed at future improvement, whereas student self-evaluation is aimed at grading completed tasks (p. 13). Andrade (2019) distinguishes between formative self-assessment and summative self-assessment in terms of progress and performance and the associated types of judgement made by students. Formative assessment may involve judgements “of progress towards specific targets”, while summative self-assessment involves “post-task judgments of ability based on performance” and is essentially “self-grading”, without feedback (Andrade, 2019, p. 3). Ross (2006) also mentioned that both types of self-assessment include judgements,

whether or not they are used to contribute to final grades, although he considered self-assessment in metacognition to be something different (p. 2).

This present study adopts the view of Andrade and Valtcheva (2009) because students need to think about their learning processes, identify areas for improvement and ways of making improvement, rather than be distracted by thoughts of their final grade. The importance of feedback has been stressed by many authors (e.g., Carless et al., 2011; Hattie & Timperley, 2007; Mamoon-Al-Bashir et al. 2016; Shute, 2008). When students complete a task using self-assessment, it is important to create a feedback-feedforward loop by making improvements the next time they perform a similar task. Some definitions of self-assessment include “self-assessment of one's abilities, processes, and products”, all of which depend on “feedback from oneself.” (Andrade, 2019, para. 4). All three of these - self-assessment of one's abilities, processes, and products - are engaged in this present study which focuses on helping students to understand how to carry out self-assessment of pronunciation to assist them in achieving at least the required level for the aviation industry. In this particular setting, the pedagogical tool is directed at students learning to self-assess, in other words learning about the process of self-assessment and how to conduct it. This includes students' enquiry into their own learning habits and strategies in terms of their English pronunciation as well as identification of areas for improvement. However, students also need to be aware of the expectations of the aviation industry and indeed other employment sectors for continuous professional development, which is often linked to rising standards and changes to procedures. In their future lives they will have to be aware of these changes and to know where they need to improve. Thus, the inclusion of a required level in the pedagogical tool in this present study means there is reference

to criteria and standards, which provide students with guidance on what they are aiming for, as recommended by Andrade and Du (2007) who mentioned that students welcomed such guidance (p. 165) and found self-assessment easier when they were clear about what was expected of them (p. 169).

There are several theoretical perspectives that underpin various models of self-assessment, including “1) cognitive and constructivist theories of learning and motivation, 2) metacognition theory, and 3) self-efficacy theory” (McMillan & Hearn, 2008, p.42). There were three main reasons for selecting metacognition theory as the perspective for this present study. The first reason was that many scholars have reported a close relationship between formative self-assessment and metacognition (e.g., Andrade, 2019; Hattie & Timperley, 2007; O’Malley & Chamot, 1990; Oxford, 1990; Siegesmund, 2016). For example, Andrade (2019) mentions that metacognition is one of the components of the formative assessment process, focusing on how students think about and monitor their learning rather than making judgements about progress towards learning goals (p. 3). Some scholars propose that “self-assessment may assist students to develop metacognitive skills, as they learn to recognise their own abilities and deficits” which will help them to improve (Jessner, 2018, p. 41), or by reflecting on their learning “to target metacognition” (Siegesmund, 2016, p. 205). It is argued that the concepts of metacognition and self-assessment are strongly interwoven (Jessner, 2018, p. 41).

The second reason for selecting metacognition theory was the notable increase in interest and use of metacognition in language teaching and learning in recent years (Haukås et al., 2018; Raoofi et al., 2014), although interest in the role of metacognition

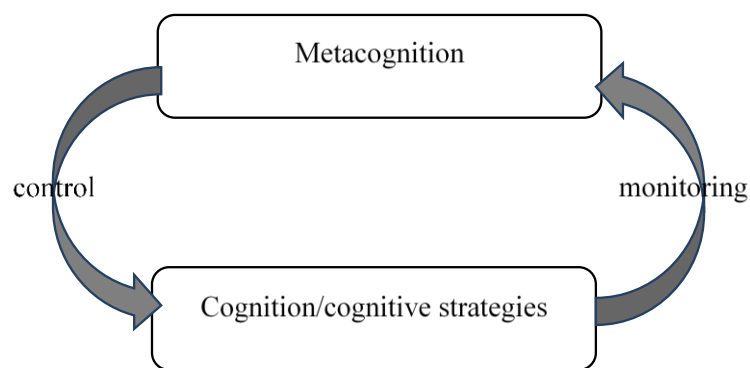
in language learning has been evident for some time. For example, metacognitive strategies in language learning, such as identifying opportunities to practise, paying attention, and monitoring production, were highlighted by O'Malley and Chamot (1990) and Oxford (1990). However, the increased interest since then has not been evenly spread across the language skills of reading, writing, speaking, and listening (Haukås et al., 2018). It is recognised that speaking makes “heavy demands on speakers’ abilities to use metacognitive strategies” (Zhang et al., 2022. p. 1) and that integrated speaking tasks could be used by teachers to highlight these strategies. The present study seeks to apply this to pronunciation as one aspect of speaking on the basis it will contribute towards overall development of students’ use of metacognitive strategies.

The third reason for selecting metacognition theory was its relevance to the specific context in which this present study took place. At national level, for some years Malaysian higher education has moved towards increasing use of a student-centred approach to teaching and learning as it seeks to incorporate soft skills such as thinking skills, problem solving skills, and lifelong learning as decreed by the Ministry of Higher Education (2007). Over the last few years, teaching staff at the site where this study was conducted have introduced elements of a more student-centred approach in order to boost students’ critical thinking and problem-solving skills, most recently by a shift to problem-based learning. Characteristics of student-centred learning include students being active learners, reflecting on their learning, and taking more responsibility for their learning (Lea et al., 2003), all of which are also characteristics of both self-assessment and metacognition.

This present study therefore adopts the metacognitive theory of learning, which has its origins in the work of Flavell (1979), as the main theory underpinning self-assessment. The literature on metacognition is reviewed in more depth in the following section, given its importance to the present study.

### 1.8.1 Metacognition

Metacognition is referred to less formally as ‘thinking about thinking’ (Fisher, 1998; Rickey and Stacy, 2000, p. 915). This is illustrated in Figure 1.1. A person uses metacognition to decide (control) which cognitive strategies to use in a specific task, and the success of those strategies feeds back to the metacognitive level where changes of strategy are considered for the next similar task.



**Figure 1.1 : Relationship between Metacognition and Cognition**

(Source: Nelson & Narends, 1996 and Muijs & Bokhove, 2020)

According to Haukås (2018), metacognition encompasses “an awareness of and reflections about one’s knowledge, experiences, emotions and learning in the contexts of language learning and teaching” (p. 13). Evidently, this applies to pronunciation as a component of language learning.

Although metacognition has a long history (Dunlosky & Metcalfe, 2009; Coşkun, 2018), it has only become a distinct field of research since the 1970s (Tanner, 2012). Prior to that, interest had centred on reflection as a conscious process of thinking about learning. Dewey (1933) described reflection as “active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and further conclusions to which it leads” (p. 118). Kolb (1984) clarified that the process should be cyclical and not linear. Schön (1991) explained further that there was a difference between reflection after an experience, or reflection on action, and reflection on what was happening during an experience, or reflection-in-action. Meanwhile, interest in metacognition was gaining ground.

The term metacognition is attributed to Flavell who defined it as “one’s knowledge concerning one’s own cognitive processes or anything related to them, e.g., the learning-relevant properties” (Flavell, 1976, p. 232). Flavell highlighted the importance of cognitive monitoring, that is, individuals’ awareness and observation of their memory, their understanding, and indeed any other conscious thinking processes (Flavell, 1979, p. 106). He explained that this involved “interactions among four classes of phenomena: (a) metacognitive knowledge, (b) metacognitive experiences, (c) goals (or tasks), and (d) actions (or strategies)” (1979, p. 609). He clarified that metacognitive knowledge concerns knowledge about a task and its goal, knowledge of the possible strategies for achieving the goal, and knowledge about oneself (Flavell, 1979, p. 907), such as whether a person learns better by watching someone do something or reading an instruction manual, or believes that other ESL students are better at speaking.

Flavell also explained that metacognitive experiences are experiences which make someone aware of their thinking and provoke an insight or emotional response, for example realising they are reading an article but not understanding it, or that other people do not understand them very well when they speak English. An individual can then select a strategy to achieve the goal of the task. If the individual then thinks about how well their chosen strategy achieved the goal, they are monitoring their cognitive learning. As stated by Flavell (1979, p. 909), “Cognitive strategies are invoked to make cognitive progress, metacognitive strategies to monitor it”. Kuhn highlighted that:

There would seem few more important accomplishments than people becoming aware of and reflective about their own thinking and able to monitor and manage the ways in which it is influenced by external sources, in both academic, work, and personal life settings (Kuhn, 2000, p. 181).

Dinsmore, Alexander and Loughlin (2008) noted that the meaning of metacognition was not always made clear, despite the volume of literature on this subject. They added that this lack of definition was unfortunately often found in “central concepts and constructs, such as knowledge, learning, or motivation”, when authors assumed that readers would understand or did not consider the consequences of not being clear (Dinsmore et al., 2008, p. 392). They highlighted that this applied to the use of the terms ‘metacognition’, ‘self-regulation’, and ‘self-regulated learning’. There were differences in origin and emphasis, which meant the terms should not be used interchangeably (Dinsmore et al., 2008; Muijs & Bokhove, 2020). Azavedo (2020) reported that the variety of definitions and the different ideas, assumptions and processes associated with them created a barrier to reaching a single definition. Since

this present study focused on cognitive aspects, the following definition of metacognition given by Kuhn and Dean was adopted: “Awareness and management of one's own thought” (Kuhn & Dean, 2004, p. 270).

Firstly, learners need to be aware, or become aware, of their thoughts. If they are not aware of what they are thinking, they will not be aware of their mistakes or why they are making them, and will be reliant on others to point out their mistakes and tell them how to correct their mistakes. Thus, their learning will be more restricted than if they were aware of their thinking. Perkins (2008, p. 102) proposed “four levels of metacognition: tacit, aware, strategic, and reflective”. According to Perkins, awareness starts at the second level, when individuals know that they use different methods of thinking and learning but do not necessarily deliberately think about them or plan which to choose. In language learning, “metalinguistic awareness includes aspects of linguistic knowledge, such as explicit knowledge of ... pronunciation rules” (Vold, 2018, p. 68) and students need to be aware of these in order to detect their own mistakes. At the strategic level, individuals will apply their different methods of thinking and learning in an organised way, through using strategies such as decision making and problem solving. At the reflective level, they will “reflect on their thinking-in-progress, ponder their strategies and revise them” (Perkins, 2008, p. 102).

### **1.8.2 Metacognition and Reflection**

There is a close relationship between metacognition and reflection. Muijs and Bokhove (2020) indicated that monitoring and control of thinking processes “includes at least three main components: planning, monitoring and evaluation” (p. 6). Each stage requires reflection on what is being done, and why and how well it is being done.

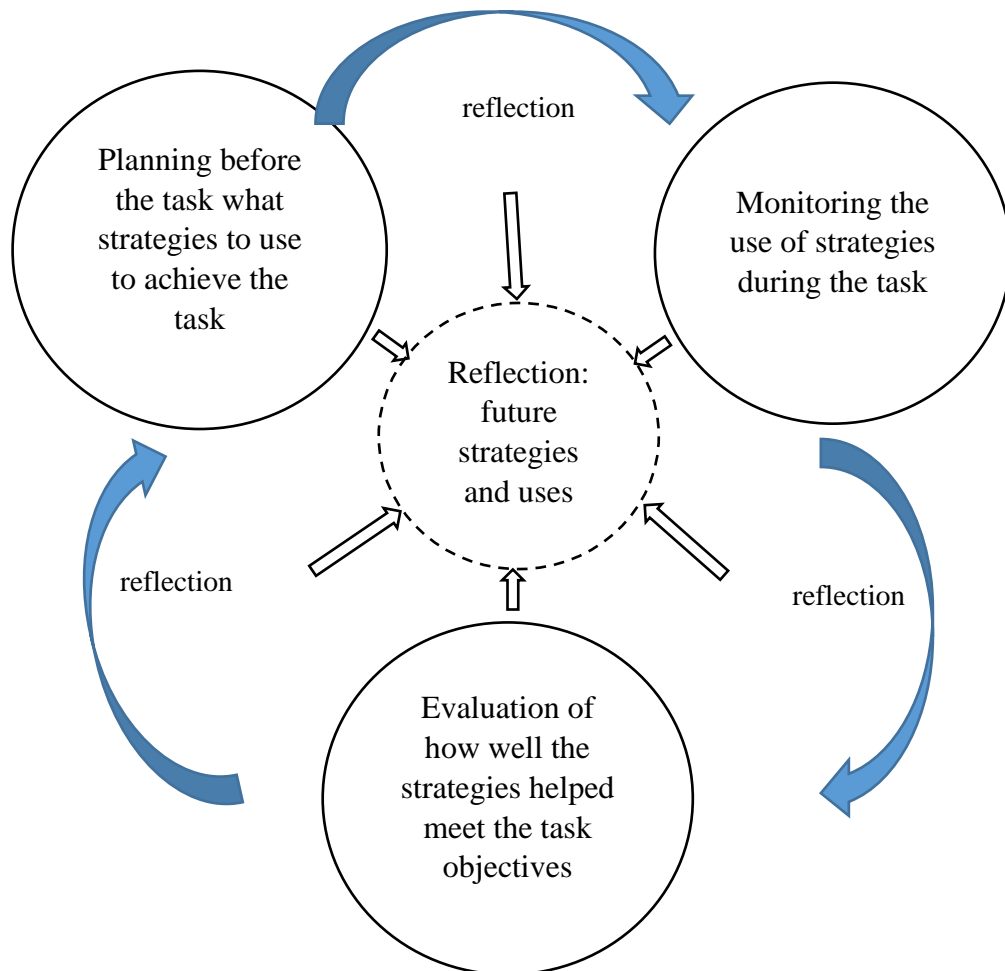
The planning component includes setting the task goal, bringing into play existing relevant knowledge, and choosing which approach and methods to apply. Monitoring involves checking that the approach and methods are being applied, while evaluation looks back at whether the approach and methods were applied as intended and considers what else could have been done. In language learning, Anderson (2008) proposes teachers need to be involved in explaining and modelling five components of metacognition, which he describes as “preparing and planning for learning, selecting and using strategies, monitoring learning, orchestrating strategies and evaluating learning” (p. 100). In performing a particular task or activity, the extent to which planning and selecting strategies are separate may not always be clear-cut, and the orchestration of strategies may be wrapped up in the evaluation phase. Zimmerman and Moylan (2009) offer a model which brings together metacognition and motivation; they use three different terms, namely ‘forethought’, ‘performance’ and ‘self-reflection’, adding various behavioural aspects of motivation, self-control and self-evaluation respectively to these stages. The terms ‘performance’ and ‘self-reflection’ have been avoided in the model used in this present study to avoid possible strong suggestions of either high-stakes testing (resulting from the use of ‘performance’) or reflection about the person rather than the thinking processes involved (from ‘self-reflection’).

There are other models of reflection, such as Kolb’s experiential learning cycle which highlights experience first, then reflection, then conceptualisation or thinking about the theory to understand what happened, and finally applying how things could have been done differently (Kolb, 1984). In contrast, metacognition implies thinking before the experience as well as afterwards. Another widely used model is the reflective

practitioner, which was intended to help professionals such as nurses and teachers think about what they were doing and improve their professional practice as well as develop theory (Schön, 1991). While the names and numbers of the stages are different and may contain different elements, they all acknowledge the importance of reflection. Moreover, referring to the importance of reflection, Boud and Molloy (2013) state that opportunities for reflection can be found throughout a task, in the preparation for a task, during the task and afterwards. From the point of view of metacognition, the feedback cycle must include thinking about the thinking and learning processes in the before, during and after stages of an activity as well as the end product. This type of reflective thinking about the stages of a learning task is summarised in Figure 1.2.

Figure 1.2 retains the emphasis on reflection ('thinking about thinking') throughout the process. It can be seen that this includes reflection on each stage of the process, contributing to the central overall reflection that feeds forward into the next task. As Flavell (1979) observed, both cognitive and metacognitive strategies can be called upon to make and monitor progress in thinking and learning while carrying out a task (p. 909). Moreover, "the interplay [between them] continues until the enterprise comes to an end" (p. 909). In other words, "metacognitive reflection" (Muijs and Bokhove, 2020, p. 24) is a continuous process throughout the task, as proposed by Boud and Molloy (2013).

The three main stages in Figure 1.2 are based on those identified by Muijs and Bokhove (2020) and Zimmerman and Moylan (2009) but are titled in relation to metacognition rather than self-regulation.



**Figure 1.2 : Simplified Metacognitive Self-Assessment Cycle**

[Source: from information from Boud and Molloy (2013); Flavell (1979), and Perkins (2008), and figures from Muijs and Bokhove (2020, and Zimmerman and Moylan (2009))

In Figure 1.2, the blue arrows indicate the basic cycle of reflection. These separate stages of reflection are added together in a central body of reflection, as shown by the white arrows, that further develops the metacognitive strategies and knowledge that are available to use when additional similar tasks are carried out.

In this present study, the pronunciation self-assessment checklist was designed to encourage reflection at each of the three stages. In the planning stage, before the activity, students were required to think about how they would pronounce the words

and whole phrases and sentences they intended to use in their spoken activity. This would also prompt them to think about the pronunciation they needed to perform the task. They were then required to think about their pronunciation during the activity with the aim of making them more aware of the thinking processes involved in the second stage. After the activity, the checklist prompted students to reflect on whether their pronunciation had enabled their listeners to understand them.

## **1.9 Contribution to Knowledge**

This thesis contributes an addition to knowledge in the following ways:

- It adds to the checklists available for formative self-assessment in learning English as a foreign or second language. In doing so, it addresses an unmet need for a pedagogical tool aimed at raising awareness of key elements of the self-assessment process, namely:
  - o assessment criteria;
  - o students' own thinking processes; and
  - o language learning strategies
- Specifically, it provides a pedagogical tool aimed at enabling students to develop their understanding of how to self-assess their pronunciation by stimulating them to think about their learning strategies in a particular task and to consider alternatives. It highlights awareness of the processes, rather than the product, of self-assessment.
- Whilst the checklist was designed for use in the context-specific setting of English classes embedded within a Bachelor's degree programme for aircraft engineering technology students in an ESL environment, it can potentially be employed in other similar environments.
- The development research approach utilised in this study offered a way of involving end users alongside experts at an early stage and hence maximising their opportunity to contribute to the checklist, increasing the likelihood that

the checklist would be used. Development research has been shown to be a useful addition to the researcher's toolkit.

### **1.10 Key Terms**

The key terms related to the study are defined both conceptually and operationally as follows. The conceptual definition is followed by the operational definition.

#### **Pronunciation**

Pronunciation includes mastering individual sounds, understanding intonation (the rise and fall of the voice in speaking), rhythm (the flow of words and phrases determined by the relation of long and short or stressed and unstressed syllables) and stress (some sounds in words and some words in sentences are pronounced with greater force or more clarity than others). As mentioned by Isaac and Harding (2017) this means that pronunciation is a combination of both segmental (individual sounds or phonemes) and suprasegmental (intonation and stress) (p. 348). Similarly, Yates (2017) described pronunciation as “the way utterances are articulated” and asserted that in language teaching and learning, focus on pronunciation should be given to “sounds, stress in words and utterances, intonation patterns, pitch, range and variation” (p. 228).

Within the scope of this study, pronunciation is perceived from the perspective of clarity in pronunciation, accuracy in word stress, regular rhythm, natural intonation, and intelligibility.

## **Self-Assessment**

Self-assessment refers to a process “when students judge their own work to improve performance as they identify discrepancies between current and desired performance” (McMillan & Hearn, 2008, p. 40). At the conceptual level, there is no consensus among scholars whether it is formative, summative or a combination of the two, although there is broad agreement that it “generate[s] feedback that promotes learning and improvements in performance” and should be primarily learning-oriented (Andrade, 2019, p. 2). Self-assessment has been operationalised using a variety of purposes and methods, including the use of pedagogical tools such as self-assessment checklists.

In this present study, self-assessment is operationalised as learning-oriented self-assessment using a checklist inspired by and adapted from The Self-Assessment Checklist for ESL Argumentative Writing released by Nimehchisalem et al. (2014), additionally drawing on other sources related to metacognition and pronunciation. This study focused on developing and validating the checklist which teachers can use to help students to reflect on how they can improve their English pronunciation. The checklist used in this study is divided into three sections, namely: Before the speaking activity, During the speaking activity, and after the speaking activity.

## **Usefulness**

The usefulness of a language test or assessment, including self-assessment, is measured in terms of six qualities, namely “reliability, construct validity, authenticity, interactiveness, impact, and practicality” (Bachman & Palmer, 1996, p. 17). Usefulness depends on the “combined effect” of these qualities and “the appropriate

balance among the different qualities...must be determined for each specific testing situation” (p. 18). For the self-assessment checklist in this present study, usefulness was operationalised in terms of reliability, construct validity, impact and practicality. Authenticity and interactiveness relate to the speaking task with which the checklist is used and not to the checklist itself.

### **1.11 Thesis Structure**

There are five chapters in this thesis, the first of which has presented the context and the research problem, aim and objectives, along with an overview of the whole research process. The second chapter contains a review of some of the key literature regarding pronunciation, and the criteria for developing and evaluating the checklist. This is followed by the methodology which is described and justified in Chapter 3. Chapter 4 presents the development of the checklist in narrative form, and reports quantitative and qualitative findings from the data. The thesis concludes with a discussion of the development research process as well as the findings and offers recommendations for future work.

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