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Unveiling Indonesian EFL Teacher's Perceptions and Challenges of Technology-based Assessment *as* and *for* Learning

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ABSTRACT

The significance of assessment as a learning component has led to the development of a sound assessment system that supports the teaching and learning objectives. Achievement of learning assessment should prioritize assessment *as* learning (AaL) and assessment *for* learning (AfL) rather than the assessment *of* learning (AoL). The appropriate AaL and AfL have influenced the process of AoL. Almost all teachers in Indonesia have faced the challenge of implementing Aal and AfL. This study used a qualitative study to report English as a Foreign Language (EFL) teachers' perceptions and challenges regarding technology-based AfL and AaL. The design of the study was content analysis using the coding procedure and the grounded theory framework as the analytical foundation. Data gathered involved conducting structured interviews with 60 EFL teachers from three central provinces within Indonesia. The findings revealed that EFL teachers in Indonesia had different perspectives about technology-based AfL and AaL as flourishing assessment approaches. Most of the EFL teachers' perceptions said that due to a lack of time, large classes, and lack of knowledge and training on technology-based AfL and AaL principles and practices in EFL contexts, implementation of technology-based AfL and AaL was viewed as challenging. The study has implications for EFL teachers and trainers in developing an instructional model of technology-based AfL and AaL.

1. Introduction

Over the past three decades, policy and professional standards have repeatedly called for teachers to integrate assessment continuously across their practice in various ways to identify, monitor, support, evaluate, and report on student learning (Coombs & DeLuca, 2022). Numerous individuals concur that assessment has gained acknowledgment as a pivotal element within the domain component of language teaching and learning (Estaji & Ghiasvand, 2021; Sonnenburg-Winkler et al., 2020). Assessment significantly impacts classroom instruction and student accomplishment (Tsagari & Vogt, 2017).

However, some studies showed that teachers lack assessment knowledge and literacy, and there is a discrepancy between assessments and instruction in many learning environments (Xu & Brown, 2017; Yilmaz, 2020). Because of its standardization through massive tests, challenge assessment civilizations, transparency restrictions placed, and critical washback impacts on different stakeholders, assessment still needs to represent and project learning (Gebril, 2022; Jones & Saville, 2016). The underlying cause of this malfunction is that many EFL teachers, policy experts, and instructional designers still regard assessment, learning, and teaching as three distinct parts instead of an embedded entire system (Gebril, 2022). Against those statements, several initiatives have been undertaken in the

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last decade to invent new assessment strategies in order to involve teachers and students in assessment practices, diminish the negative washback effect of tests, remodel the assessment-learning-pedagogy cycle, and affirm advancement and integrity in assessment to notify learning (Gebril, 2022; Hamp & Lyons, 2017; Mok, 2013).

The terminology used to describe educational assessment and its association with learning has evolved (Crooks, 2011). It recognizes the kinds of assessment that should be implemented in the learning process. The terms of assessment frequently used are formative and summative assessment. Assessment with a formative component evolved into assessment *for* learning (AfL), which highlighted the objective of assessment as boosting the learning and teaching process in general. Assessment with a summative activity evolved into assessment *of* learning (AoL), which was employed to evaluate achievement and monitor progress following a structured learning activity. Some studies (Broadfoot et al., 1999; Crooks, 2011; Earl, 2003; Earl, 2013) invented the other assessment, assessment *as* learning (AaL). This previously assigned students taking an active role in self-assessment and self-directed learning as a direct implication to optimize the learning process. In this perspective, the student is considered an active and participating assessor who supports the development of metacognitive and self-regulated learning skills (Lam, 2016). Some scholars contend that AaL should be recognized as a subcategory of AfL (Clark, 2012; Earl, 2013; Lam, 2018).

Controversy related to teachers' understanding of AfL and AaL is still being debated as well because the two fundamental understandings are almost identical. However, previous studies claimed that AaL as a balance between Afl and AoL (Yan & Boud, 2022) has not even been investigated in the EFL teacher environment in Indonesia. Another standpoint is that AaL, AfL, and AoL should be considered interconnected units working together with the overall learning system to acquire knowledge and skills (van der Vleuten et al., 2017). However, teachers have historically conducted the majority of AoL. Implementing AoL could not precede AaL and AfL. The process of AoL has been influenced by the appropriate AaL and AfL. The challenge of implementing Aal and AfL has been faced by almost all teachers. It has been stated as well by Yan (2021) that it is easier to increase teachers' AaL and AfL implementation with on-site support.

More recently, related to the technology awareness needed in the 4.0 industrial revolution, assessment activities should not be separated from technology implementation. Technology-based assessments are commonly used to improve teachers' productivity by assessing their students efficiently without missing the fundamentals of AaL and AfL. Unfortunately, teachers' frequent use of technology in and out of the class does not guarantee the successful integration of technology for language teaching purposes, including assessment. Unless technology for pedagogical purposes requires a combination of knowledge, training, technical skills, opportunities for use, and instructional support from various sources (e.g., knowledgeable peers, educational trainers, technology support groups), when teachers' pedagogical purposes are supported with the effective use of technological tools, they may create space to foster learning opportunities for students (Gonen, 2019). The above issue is becoming particularly crucial for teachers and researchers as massive evaluation programs embrace a growing number of technology-based assessments (Quellmalz et al., 2012; Salend, 2009; Wolf & Lopez, 2022).

Since the multi-layered conditions and problems described above and the previous studies have yet to be fully investigated in implementing technology-based AaL and AfL. There seem to be limited studies addressing only technology-based assessment, which is still in general. Those studies have not included the specific investigation of Aal and Afl in EFL teachers. As a result, this study aims to look into EFL teachers' perceptions and challenges regarding the implementation of technology-based AfL and AaL.

2. Review of Literature

The assessment in the classroom as part of the teaching-learning process must interrelated with the purposes of classroom assessment. It comes out with three kinds of assessment processes: assessment *for* learning, assessment *as* learning, and assessment *of* learning. Teachers or educators commonly know the fundamentals of AfL, AaL, and AoL, AfL and AaL need more emphasis to support AoL's success in teaching learning. Technology-based assessments are commonly used nowadays to improve teachers' productivity by assessing their students efficiently without missing the fundamentals of AaL, AfL, and AoL. Some relevant theories are reviewed to be employed as fundamental bases for

building the theoretical framework of this study. There are three topics of discussion: Assessment *for* learning (AaL), Assessment *as* learning (AfL), and Technology-based Assessment.

2.1 ***Assessment for Learning (AfL)***

Assessment *for* learning (AfL) is an element of students', teachers', and peers' daily practice that seeks to reflect on and responds to information from discussion, demonstration, and observation to improve ongoing learning (Wu et al., 2021). AfL necessitates teachers to collect real-time information about student learning and employ it to provide targeted and specific feedback (Mohammadi et al., 2023) to direct student learning, resulting in improved academic performance and self-regulation skills. AfL practice entails developing specific learning goals and critical success factors (results indicate), evoking and perceiving the evidence of learning, capacity to achieve or relatively close pedagogical activity supported by evidence, and stimulating students' full involvement in the needs assessment. Thus, the primary theme of AfL is teachers' pedagogical involvement in the urgency of student achievement and the advancement of students' learning authority (Black & Wiliam, 1998; Sadler, 1989).

Another finding discovered that interaction between teachers and students has been established as a principal source of data in AfL (Black & Wiliam, 2009). Teachers consider factors about the pedagogical activity they will start taking based on their analysis of evidence prompted during their interactions with their students. It is contingent on the student's current learning status and is matched to the "boundary" of students' learning (Heritage & Heritage, 2013). In AfL, learners require an associative role, evaluating their learning with the target of correlating their current educational status to the target and assessment standards to formulate verdicts about their achieving objectives (Hattie & Timperley, 2007). Subsequently, one of the top objectives of AfL should be to assist learners in acquiring these learning competencies so they can gain knowledge for themselves after school.

AfL is the context in which the interaction occurs. Heritage (2018a) revealed that co-regulation in support of self-regulation occurs during the interaction as the teacher elicits evidence and responds to the revealed status of student learning (1) In the context of Assessment *for* Learning (AfL), it is essential for educators to guide their students in comprehending the requirements for achieving their learning objectives and the specific criteria that will be employed to evaluate their progress. This practice of clarifying expectations and performance metrics is integral to the successful implementation of AfL. By helping learners fully grasp what is expected of them, teachers facilitate the development of self-monitoring and self-evaluation skills that enable students to assess their progress more effectively; (2) Scaffolding (Heritage & Heritage, 2013), contemplate scaffolding to be the method of establishing the circumstances for a moment of acknowledgment, recognition, or heuristic that occurs when the student makes a first step toward the latest level of comprehension; (3) Intersubjectivity is a significant motivating framework for scaffolding implementation; (4) Individuals actively construct their understanding in the cognitive perspective by integrating new knowledge to previous knowledge. They transform their previous knowledge to incorporate the new knowledge, rebuilding current cognitive frameworks in the system; and (5) Co-regulatory support, or temporary support, involves providing feedback and assistance through scaffolding and other peripheral facilitates, such as when teachers request information from learners, summarise or rephrasing learners' statements, demand learning decisions, prototype thoughts, as well as provide encouragement for reflection and thought. When learners get this type of assistance while learning, they can adequate these systems, legislating their learning autonomously by selecting appropriate, relevant data for themselves and deriving their performance presumptions.

Heritage (2018a) said that learners' significant involvement in AfL in observing their advancement toward their objectives and adjusting their learning methods as necessary is reliable with these criteria of self-regulated learners. Co-regulation entails learners obtaining particular interventions from others (Heritage, 2018). The process of co-regulation involves the shared distribution of cognitive effort between the two individuals involved in regulatory support: the one assisting and the one acquiring new regulatory knowledge and skills. This collaborative effort divides the cognitive load between the parties, allowing for a more efficient transfer of knowledge and the development of practical skills. Through this appropriation process, the co-regulation progressively transfers to self-regulation (Vauras et al., 2003); as a result, self-regulation processes that learners cannot initially undertake on their own gradually become a part of their independent practice. According to Rogat and

Adams-Wiggins (2014), co-regulation can also be defined based on how well the co-regulation provided by a teacher results in the productive transmission of the learning process restrictions to the student, who is the objective of their guidance. Zulaiha (2019) draws the intention that co-regulation could be advantageous in emphasis and results (i.e., helps a learner on the path to self-directed learning) or even more prescriptive in surroundings (i.e., may contribute to reaching the end of a subject project but could also be disadvantageous to the publicity of student self-regulation). The socially beneficial component of co-regulation contributes to the growth of learners' self-regulation skills.

2.2 Assessment as Learning (AaL)

The process of self-assessment is particularly effective in promoting the concept of assessment as learning. The fundamentals for self-assessment are based on purposeful learning principles; then, the strategies in which learners attempt to make meaning of their experiences are analyzed so that recommendations for organizational function for learner involvement can be appointed much further. She also claimed that engaging children in aspects of self-assessment could benefit their intimate and intellectual development. Thus, self-assessment is a component of the educational process rather than a means of providing formative assessment substantiation (Dann, 2003; Lam, 2020).

The principles and practices are conceptually related to the learners' self-regulatory role in learning. Any concept of assessment will be weakened unless the many and complex ways in which learners understand interpret, and make sense of their surroundings are acknowledged. Although there are no guarantees that outcomes incorporating self-assessment will provide more than a glimpse of learners' understanding and achievement, they can provide opportunities for learners to think, learn, and judge in ways that can be developed continuously throughout schooling and beyond. Yan and Yang (2021) state that AaL is a learning strategy, rather than an assessment method, that requires students to learn from engagement with the assessment task itself as well as activities associated with it, AaL task has to generate learning opportunities for students beyond recalling and using their prior knowledge and foster the development of metacognition and self-regulation for students to monitor their performance and cater for their ongoing learning needs.

2.3 Technology-based Assessment

Technology-based assessments focus on the use of technology by teachers and learners to create learning products, promote their technology skills, and examine learners' strengths and challenges and the outcomes of daily classroom instructional and social activities (Chappuis, 2008; Kapsalis et al., 2020; Salend, 2009). All classroom and technology-based assessments can link instruction to formative and summative assessments. An essential consideration is that using technology must facilitate the teaching, learning, and assessment processes without altering the classroom-based instruction, tasks, and skills being taught and assessed (Salend, 2009; Wolf & Lopez, 2022). Teachers must consider several factors when using technology in implementing AfL and AaL. Those factors (Salend, 2009) are the assessment technique and technology allow teachers and learners to measure meaningful language skills and instructional outcomes wholly and directly; the assessment technique and technology are appropriate for students' ages and developmental, academic, cognitive, language, social, behavioral, and technological skill levels; the assessment technique and technology allow teachers to accommodate students' differences (e.g., disability, cultural and linguistic background, socioeconomic status); the assessment technique and technology help teachers plan, deliver, evaluate, and revise their instructional language program to enhance student learning; the assessment technique and technology facilitate sharing of relevant information with other professionals and students' families. Research is scarce on the genuine viewpoints of Indonesian EFL teachers using technology-based Afl and AaL. The current study sought to answer the following research questions based on the research background mentioned previously.

1. What are the Indonesian EFL teachers' perceptions of implementing technology-based Afl and AaL?
2. What challenges do Indonesian EFL teachers encounter while implementing technology-based Afl and AaL?

3. Method

3.1 Design of the Study

The study investigated English as a foreign language teachers' perceptions and challenges regarding technology-based AfL and AaL by employing a qualitative study. It conducted semi-structured interviews to probe teachers' perspectives and challenges regarding implementing technology-based AfL and AaL. The design of the study was content analysis using the coding procedure (Saldaña, 2021). The experts were assigned to test the content validity and reliability of the interview questions. The experts invested the week analyzing each question's applicability, specificity, and language appropriateness.

3.2 Participants and Research Setting

This study collected data from 60 EFL teachers hailing from three central provinces within Indonesia, who agreed to participate in the study. They were lecturing in English at various universities, schools, and language institutes throughout Indonesia, and the specific information was in Table 1. They majored in English language education, applied linguistics, and English literature studies, with a gender split of 40% males and 60% females. Before beginning the study, the researchers explained the purpose of the study and convinced the participants that their identities, answers, and personally identifiable information would indeed be handled privately.

Table 1

Demographic Information of EFL Teachers in Indonesia

Demographic Information	Number (%)
Age	
22-26	15 (25%)
26-30	11 (18%)
31-35	18 (30%)
35 <	16 (27%)
Gender	
Male	24 (40%)
Female	36 (60%)
University Degree	
BA	27 (45%)
M.Ed or MA	21 (35%)
PhD	12 (20%)
Field of Study	
English Language Education	33 (55%)
Applied Linguistics	12 (20%)
English Literature	5 (8.3%

3.3 Instruments

The researchers used a voice semi-structured interview with two segments to obtain relevant responses to the research questions. The whole first section focused on the participants' environments, while the other one questioned six questions about teachers' perceptions and challenges relating to technology-based AfL and AaL. The researchers individually headhunted sixty EFL teachers for a 15–30-minute interview. During the question-and-answer session, respondents were required to communicate and clarify their views on various facets of technology-based AfL and AaL. The researchers developed the interview questions to help answer the research questions, and expert judgment validated the items of interview questions. There are six interview questions have been given to the participants during the interview sessions:

1. *Do you frequently incorporate technology into the learning process, including assessments, both formative and summative?*
2. *How do you distinguish between assessment for learning and assessment as learning?*

3. *What are your opinions on the technology-based assessment?*
4. *How can technology assist you in accommodating teaching and learning activities, including such assessment for learning and assessment as learning in students' differences?*
5. *What can you undertake as a teacher to optimize your skills and knowledge of technology-based assessment for learning and assessment as learning so that you can properly implement it in class activities?*
6. *What challenges did you face when implementing technology-enhanced assessment for learning and assessment as learning?*

3.4 Data Collection Procedure

The researchers conducted semi-structured interviews with 60 EFL teachers in Indonesia to gather the required data. Three experts were assigned to test the content validity of the interview questions. The experts invested the week analyzing each question's applicability, specificity, and language appropriateness. Some modifications were made to the items in response to the experts' feedback, and the content validity index was approved in terms of relevancy, clarity, and language appropriateness. Regarding this, a 15-30 minute approximately was meticulously documented through audio recording and subsequent transcription; it was held during non-instructional time. Utilizing the grounded theory framework proposed by Glaser (1967) as the analytical foundation for getting valid and reliable data, the transcribed materials underwent a meticulous word-by-word content analysis to delineate prevalent patterns and recurring themes.

3.5 Data Analysis

The data analysis was done qualitatively by conducting content analysis using the coding procedure (Saldaña, 2021). They were transcribing the data, sorting it, initial coding, second-level coding, using a template code, and growing ideas and themes to discern prevalent patterns and recurrent themes within the dataset. After the coding and quantification of data, identifying the foundational themes, their frequencies were tallied, and the findings were organized into tabular form (Ahmadi & Sheykholmoluki, 2023; Dörnyei, 2007).

4. Results

The extraction of themes from teachers' interview data used six stages. There were transcribing the data, sorting the data, initial coding, second-level coding, using a template code, and growing ideas and themes (Ahmadi & Sheykholmoluki, 2023; Saldaña, 2021). Those stages led to the categorization of some themes.

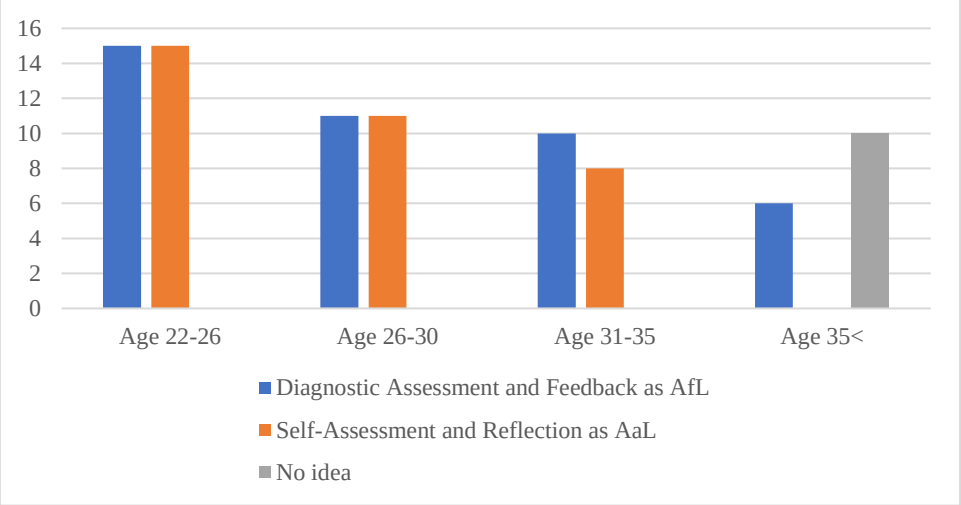
4.1 EFL Teachers' Perceptions Regarding Technology-based AfL and AaL

EFL teachers' perceptions of regarding technology-based language AfL and AaL were found by asking six interview questions and analyzed by combining the theory of technology-based assessment from Salend (2009), assessment *for* learning from Heritage (2018), and assessment *as* learning from Yan and Yang (2021), and Schellekens (2021). The questions sought out the participants' understanding of technology-based assessment *as* and *for* learning.

4.1.1 EFL Teachers' Perceptions Regarding AfL

Teachers were asked about their understanding of Assessment *for* learning. Figure 1 summarizes the obtained results.

Figure 1
Teachers' Perception Regarding Their Understanding of the Implementation of AfL and AaL



As revealed in Figure 1, 42 EFL teachers (70%) understood what AfL is, and 34 EFL teachers (30%) understood the fundamentals of AaL. On the other hand, 10 EFL teachers needed to learn about AaL. The prevailing proportion of educators exhibited a profound comprehension of the distinctions between AfL and AaL, particularly among those aged 22 to 30 years. Teachers within the age range above 30 years old stated that:

> *To this point, I have been familiar with formative and summative assessments. I have not looked into the whole assessment for, as, and of learning thing, which is currently being introduced to all the teachers here in Indonesia. I hope it is similar to the assessment methods I use. The thing is, I am already in my 40s, and picking up new stuff can be challenging, especially considering all the extra paperwork and tasks we teachers already have on our plate* (Teacher 53 & Interview question 2).

In contrast with teacher 53, teacher 7 (28 years old), teacher 21 (30 years old), and teacher 10 (25 years old) said that:

> Technology-*based AfL and AaL help students understand new information by connecting it to prior knowledge. In order to accommodate the new knowledge, they modify their prior knowledge, reconstructing existing cognitive structures in the process; for example, conducting AfL will support students in how to progress based on their current achievement and understanding, so teachers' assessment will practice include efficient, innovative teaching, monitoring, and scaffolding activities and differentiation between students; also students will automatically enhance their metacognitive skills in the process of AaL because they apply the self-assessment and reflection based on the feedback student get in the process of assessment for learning (*Teacher 7 & Interview question 2).
>
> *In my opinion, technology-based AfL and AaL accommodate me as an EFL teacher to evaluate the student's progress quickly and automatically* (Teacher 21 & Interview question 2).
>
> *To me, AfL and AaL using technology focus on process rather than product. They highlight feedback and interaction not just simple scores* (Teacher 10 & Interview question 2).

This response revealed that teachers over 35 need help learning and implementing AfL, AaL, and AoL as assessments that cannot be separated due to time constraints and accumulated administrative workload. The policymakers should highlight this response to socialize the assessments that can be

applied without disrupting the workload of the previous teacher administration. Teachers should be literate in assessment to understand and differentiate the aims of assessment, create and use assessment information to teach effectively, and design an environment that supports learning. The learning government should facilitate a continuous flow (feedback) of information to inform current teaching and learning, including the curriculum (Schellekens et al., 2021). Revealing the response of teachers 53, 7, 21, and 10, related to the theory from Heritage (2018) was used by investigating that AfL and AaL represent the process of interaction, co-regulation, and self-regulation.

4.1.2 EFL Teachers' Perceptions Regarding AaL

Teachers were asked mainly related to the fundamental understanding of AaL. As revealed in Figure 1, 34 EFL teachers (30%) understood the fundamentals of AaL.

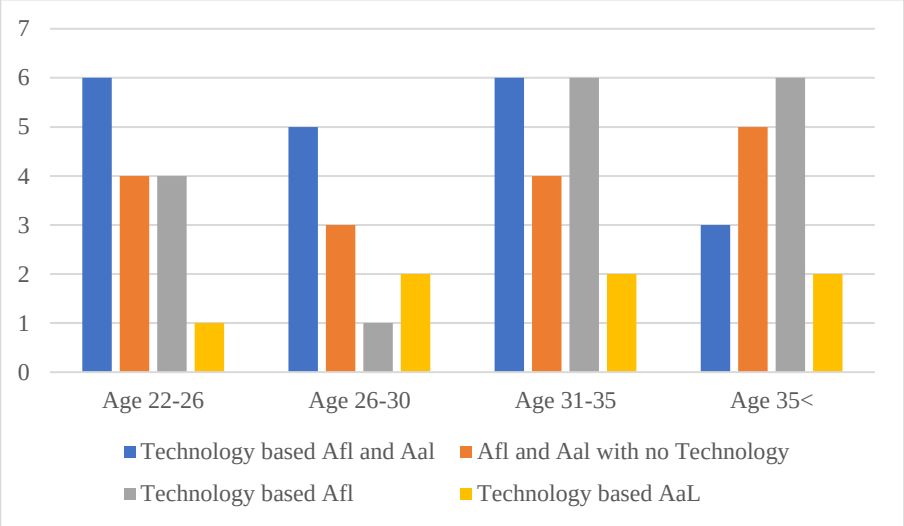
> *According to my own experience, AaL can be successful if the AfL that I do is appropriate and on target, meaning that students understand what they have learned and understand and do not understand. If, in the AfL process, the teacher can accommodate activities as well as possible, students will be challenged in the AaL process, and their critical thinking will automatically develop so that they can carry out self-assessments or peer assessments of their classmates. Because the AfL process requires creative ideas and feedback for each student, sometimes it will cause the AaL process to not be achieved. Only children with high curiosity and good critical thinking skills can do AaL even if AfL does not go as it should* (Teacher 20 & interview questions 2).

This response showed that the success of Afl happened if AfL occurs throughout the learning process, teachers align instructions with the targeted outcomes, identify particular learning needs of students or groups, select and adapt materials and resources based on student's learning needs, create differentiated teaching strategies and learning opportunities for helping individual students move forward in their learning and provide immediate feedback and directions to students. The success of the AfL process would be directed to guide teachers in promoting the development of independent learners through AaL by modeling and teaching the skills of assessments, guiding students in setting goals and monitoring students' progress, guiding students in developing internal feedback or self-monitoring mechanism to validate and question their thinking and to become comfortable with the ambiguity and uncertainty that is inventible in learning anything new; providing regular and challenging opportunities to practice, so that students can become confident, competent self-assessors; monitoring students' metacognitive processes as well as their learning and provide descriptive feedback; creating an environment where it is safe for students to take a chance and where support is readily available (Earl & Katz, 2006). Teachers are the essential factor for the success of AaL by following the guidelines of Afl appropriately; it is evidence that AfL and AaL are processes that cannot stand independently. In line with the previous study, AaL is a balance between AfL and AoL (Assessment of learning/ summative assessment) (Yan & Boud, 2022).

4.1.3 EFL Teachers' Perceptions Regarding Technology-based Assessment

Teachers were asked about incorporating technology into the learning process, including assessment. The obtained results are summarized in Figure 2.

Figure 2
Teachers' Perception Regarding Incorporating Technology into the Learning Process and Assessments



As demonstrated in Figure 2, 20 EFL teachers (33%) incorporated technology into the learning process and AfL and AaL. On the other hand, 16 EFL teachers (27%) still need to incorporate technology into AfL and AaL, and 17 EFL teachers (28%) only integrated technology-based AfL by conducting some quizzes to collect in-time information about student learning. Most teachers expressed that they already know the fundamentals of technology-based assessment *for* and *as* learning, as one of the teachers stated in the following statements.

> *I am familiar with the concept of technology-based AfL and AaL, understanding what it means to meet learners' learning goals and the performance criteria that will be used to evaluate students' learning. My students were also excited when using technology in teaching-learning, including assessment. In the first meeting, I was holding a diagnostic assessment as a part of AfL by integrating technology using Quizizz, Nearpod, Moodle, Google Classroom, Padlet, Wakelet, or kind of AI like Elsa and Orai* (Teacher 2 & Interview question 1).

This response represented the theory from Salend (2009) that the assessment technique and technology allow teachers and learners to measure meaningful language skills and instructional outcomes wholly and directly. The other study stated that an increased presence of technology in the classroom provides new possibilities for engagement in teaching, learning, and assessment practices (Danniels et al., 2020). 17 EFL teachers only experienced integrating technology-based AfL. One of them said:

> *It was much easier when using Kahoot or other technologies; it could be LMS or any artificial intelligence for analyzing students' levels before beginning the teaching activities like diagnostic assessment. However, it could be challenging if the internet connection was unstable* (Teacher 40 & interview question 1).

This response has the same findings from the previous study by Dridi et al. (2020), which found that issues of internet connectivity altered the students' experience during the teaching-learning process; students feel less confident in guidance when the feedback from their instructor is delayed, in the context of chronic internet connectivity issues, the teachers have difficulty assessing their students' needs and challenges. The study also found that, in light of these intermittent connection issues, the collaborative learning environment assisted students in navigating technological challenges.

4.2 EFL Teachers' Challenges Regarding Technology-based AfL and AaL

EFL teachers' challenges regarding technology-based AfL and AaL were found by asking six interview questions and analyzed by combining the theory of technology-based assessment from Salend

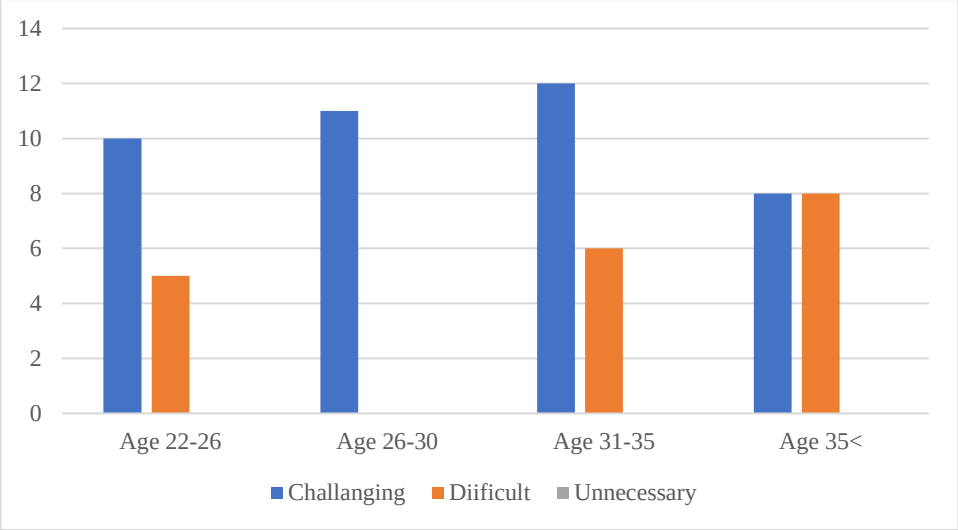
(2009), assessment *for* learning from Heritage (2018), and assessment *as* learning from Yan and Yang (2021), and Schellekens et al., (2021). The questions sought out the participants' understanding of technology-based assessment *as* and *for* learning.

4.2.1 EFL Teachers' Challenges Regarding the Understanding of Implementing Technology-based AfL and AaL

Teachers were asked about their challenges in implementing technology-based Assessments *for* learning and Assessment *as* learning.

Figure 3

EFL Teachers' Challenges Regarding the Understanding of Implementing Technology-based AfL and AaL



As demonstrated in Figure 3, 41 EFL teachers (68%) feel challenged to adapt to something new. Technology may not be new in teaching and learning, but it is new when used in assessment. Nevertheless, 19 EFL teachers (32%) still find applying technology in the assessment challenging. They think not all people are technologically literate and not all regions in Indonesia have a stable internet connection to operate certain technologies in an assessment where the Afl, AaL, and AoL must be present in all learning processes from start to finish. One of the EFL teachers said:

> *Technology-based AfL and AaL reflect social change and are a kind of educational restructuring highlighting a learning society. They will work if the teacher wants to learn to adjust correctly and adequately the fundamentals of technology and how the assessment can be carried out using technology, including basic understanding related to the assessment. On the other hand, the government must also be good at socializing associated with these changes so that all can be literate. However, on the other hand, the technology that has begun to be applied in the learning process, including in the assessment in the "Merdeka Belajar" curriculum, has not been fully socialized and is still in the process until now, which has resulted in technology-based assessment using the three assessments AfL, AaL and AoL not yet being fully implemented in Indonesia including the problem of internet connection (*Teacher 5 & Interview question 3).

This response showed that understanding AfL and AaL notions and their definitions is a must to enhance constructive alignment and an improvement in applying assessment strategies. It also altered teachers' views about teaching, learning, and instruction (Schellekens et al., 2021). On the other hand, integrating an assessment learning environment between the intended national and educational regulations and the actual activity at the classroom level demonstrated cohesiveness. The policy on a national level demonstrated cohesiveness with classroom procedures. Nevertheless, there were findings regarding school and classroom policy consistency, implying a gap between the assessment practices described in the curriculum and how they are implemented in the classroom. Another teacher said that:

> *I am not sure that technology-based AfL and AaL accommodate the students' differences since not all teachers implemented the process of Afl and Aal before conducting AoL. Teachers must implement AfL to know the students' characteristics, needs, and progress. Without applying the diagnostics assessment at the beginning of the meeting, the teacher will find it challenging to know the remaining needs, the different student characteristics, and the student's understanding of particular material beforehand, so it will automatically be challenging to prepare material according to the different needs of students; as a result, the teacher only follows the existing curriculum the reality is not following their students (Teacher 14* & Interview question 4*).*

This response reveals the theory from Salend (2009) that the assessment technique and technology allow teachers to accommodate students' differences (e.g., disability, cultural and linguistic background, and socioeconomic status. Salend (2009) also said that when selecting an assessment method and technology, it is imperative to consider the student's age, developmental stage, academic proficiency, cognitive ability, language proficiency, social skills, behavioral tendencies, and technological literacy. Ensuring the chosen assessment techniques and technologies are well-suited to the student's needs and abilities. This approach to assessment acknowledges the unique characteristics of each student. It aims to create a learning environment that is supportive and tailored to their specific requirements, fostering a more inclusive and practical educational experience. In line with the previous study, educational assessment refers to the ability of a skilled teacher to modify and adjust ongoing teaching and learning in response to students' individual pedagogical preferences (Schellekens et al., 2021). Teachers fulfill students at their current level of knowledge and assist students in determining how to advance based on their current achievements. Assessment practices used by teachers include efficient and innovative teaching, monitoring, scaffolding activities, and student differentiation.

4.2.2 EFL Teachers' Challenges Regarding Teacher Professional Development

However, some teachers have their perceptions related to the challenges they faced during their understanding of technology-based AfL and AaL, as demonstrated in Figure 4.

Figure 4

EFL Teachers' Challenges Regarding Teachers Professional Development (TPD)

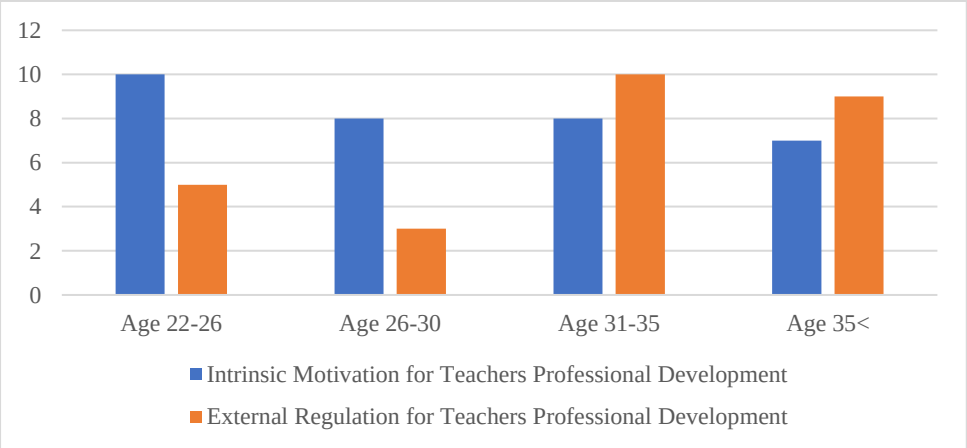


Figure 4 revealed that two kinds of teachers have the factor of joining professional development, especially when learning technology-based assessment; 33 EFL teachers (55%) have their intrinsic motivation of TPD, and 27 EFL teachers have external regulation of TPD—the results related with the interview of some EFL teachers.

> *Reading books and articles and attending training courses and workshops have proven to be highly beneficial to me.* (Teacher 26 & Interview question 6).

I think, as EFL teachers, we can raise our knowledge and practice of technology-based assessment as and for learning by taking part in workshops, conferences, webinars, and reading books and articles to improve our knowledge as educators not only to fulfill our obligation as educator (Teacher 8 & Interview question 6).

Reading about technology-based language assessment as and for learning assessment is very useful, plus consulting *and sharing ideas with experienced colleagues. These activities improve knowledge and practice of technology-based AfL and AaL as a new assessment approach. Although it is part of the new curriculum "Merdeka Belajar," and as educators, we have to learn it, it becomes a necessity that I must learn to support my career performance and part of the mandate to become a teacher* (Teacher 36 & Interview question 4&6).

Those responses revealed that teachers primarily engage in professional development activities, such as attending training courses, workshops, seminars, webinars, and conferences related to assessment or reading articles and books, in order to enhance their knowledge and practice of technology-based language assessment not only to fulfill their obligation, or because of their work demands it or because they have been paid for it, but also teacher deeply understand as their educator, they need for understanding of technology-based assessment as well as their ability to implement it effectively. Basikin (2020) said that a teacher professional development program is a part of extrinsic motivation to change into more intrinsic motivation, given that internalization happens. In line with the previous study by Schellekens et al. (2021), they claimed that the development program influenced teachers' perspectives on teaching, learning, and instruction by establishing local assessment practice communities. Other teachers responded that:

Technology-based AfL and AaL helps integrate assessment, teaching, and learning and facilitates classroom interaction, engagement, self-monitoring, and self-evaluation among students (Teacher 11& Interview question 3 & 4).

Time limits, class size, lack of proper training on how to apply technology-based AfL and AaL, exam-oriented culture, and bias in some technology-based assessment practices like self and peer assessment are the reasons why technology-based AfL and AaL were challenging (Teacher 33 & Interview question 5).

Since technology-based assessment for and as learning focuses on mediation and feedback, large classes, limited instruction time, and lack of teachers' knowledge of how to apply it in EFL classes efficiently are challenges (Teacher 18 & Interview question 5).

Lack of sufficient time, teachers' low knowledge of technology-based assessment for and as learning, lack of training, a mismatch between curriculum and technology-based AfL and AaL practices, teachers' lack of skills in applying technology-based assessment for and as learning practices, the difficulties in selecting the appropriate technology that accommodates the process of technology-based assessment for and as learning (Teacher 36 & Interview question 5).

Lastly, the findings discovered that technology-based AfL and AaL have several advantages and disadvantages in EFL classes, as identified by Indonesian teachers. The most frequently mentioned advantages concerned the assessment approach's capacity to improve student involvement, collaborative effort, and engagement, integrate assessment with teaching-learning, and monitor students' progress. However, because of a shortage of time, large classes, and teachers needing more knowledge and training on technology-based AfL and AaL principles and practices in EFL contexts, implementing technology-based AfL and AaL was perceived as challenging. Despite some challenges in implementing technology-based assessment as part of their teaching practice, some teachers demonstrated initiative in developing procedural assessment standards that could help facilitate their adoption of this approach. These findings suggest that ongoing professional development and self-directed learning are critical components of effective assessment practice in EFL education.

5. Discussion

The objective of this study was to explore Indonesian EFL teachers' perceptions of implementing technology-based Afl and AaL and the challenges that Indonesian EFL teachers encounter while implementing technology-based Afl and AaL. It was found that EFL teachers in Indonesia had different perceptions about technology-based AfL and AaL as a thriving assessment approach. Technology-based AfL and AaL are being disseminated as part of the new "free to learn" curriculum in Indonesia; as part of implementing differentiated instruction, policymakers or government must fully support and facilitate the changes so teachers, students, and all can be literate with the changes. EFL teachers predominately perceived it as a procedure, constructive criticism, reflective, solution, and learning-oriented assessment technique that prioritizes input and growth over the overall conclusion. The findings are in line with previous studies (Alwan et al., 2007; Jones & Saville, 2016; Wolf & Lopez, 2022), which argued that technology-based Afl and AaL is an assessment method that incorporates constructive criticism and learning to consolidate assessment and instruction by concentrating on process rather than product when evaluating students' achievement.

Assessment literacy is required for both teachers and students. The willingness and curiosity of teachers regarding adapting the fundamentals of every knowledge not only AfL, AaL, and AoL itself must be concerned, but also the fundamentals of the use of technology that must be enhanced by teachers as life-long learners. They were overwhelmingly in favor of participating in education courses, studying journals and books, and participating in assessment-related seminars, video conferences, lectures, and symposiums. They supported the versatility of technology-based AfL and AaL to learn comprehension and practice. This finding could be attributed to EFL teachers' high assessment literacy and self-determination of teacher's professional development (Basikin, 2020). They were aware of various perspectives on encouraging technology-based AfL and AaL as a learning practice. That could be mainly attributable to their degree of knowledge or learning preferences obtained through programs or professional schools. Following the research's findings, the other factor contributing to the participants' thorough knowledge of technology-based AfL and AaL and professional development practices is their post-assessment personality, these programs impacted changes in classroom practice, such as an enhanced constructive alignment and an improvement in applying assessment strategies (Estaji & Ghiasvand, 2021; Schellekens et al., 2021). Teachers must be assessment literate in in order to comprehend and differentiate assessment goals, as well as create and use assessment data to efficiently teach and assist their students to become successful self-regulated students who must (learn to) understand the objectives and procedures of assessment, as well as be capable of assessing their work (Pastore & Andrade, 2019; Sadler, 1989; Smith et al., 2013; Xu & Brown, 2016).

To ensure that technology-based AfL and AaL activities achieve their intended outcomes, they must be evaluated and refined regularly. The effectiveness of technology-based AfL and AaL can be assessed by looking at student learning as evidenced by increased mastery of learning standards and improvements in student grades. Investigating equity issues is also critical to determine the extent to which various technologies are available and accessible to individual and group students. Perceptions of these technologies by students and teachers can also help determine their overall effectiveness, efficiency, fairness, and acceptability. Teachers can think about how these practices affect their instruction and how they can help monitor, support, and communicate learner learning. Teachers should also consider the time, resources, and planning required to implement these practices. Students and teachers can share their perceptions, identify effective and ineffective aspects, and make suggestions for enhancing the efficacy of technology-based assessments (Salend, 2009; Wolf & Lopez, 2022).

This study also showed the challenges of technology-based Afl and Aal, demographic data of EFL teachers in Indonesia who were randomly selected from all regions in Indonesia and from various levels of education as well as various levels of affiliation or places where they study can demonstrate that the level of understanding of teachers in the application of Afl and AaL can be seen from the level of education they have obtained, from the interview results it was found that teachers who were university graduates at the undergraduate level had difficulty implementing both assessments in their learning process than teachers teaching at the university level or teachers who graduated from doctoral studies. Technology-based Afl and Aal can be challenging for teachers with an age range above 35 years old; they cannot manage their time considering all the extra paperwork, lack of sufficient time, teachers' low knowledge of technology-based AaL and AfL, lack of training, a mismatch between

curriculum and technology-based AaL and AfL practices, teachers' lack of skills in applying technology-based AfL and AaL practices, the difficulties to select the appropriate technology that accommodate the process of technology-based AfL and AaL. Those findings can be resolved through the viewpoints of Yan & Yang (2021), whose work stated that AaL emphasizes students' active role in the assessment process, the teacher becomes no longer the sole source of feedback, and every individual student becomes a learning resource for themselves, and for one another. Thus, AfL has the potential to overcome, or at least relieve, the practical constraints encountered in implementing assessment reforms, such as big class sizes and heavy teaching workloads (Yan & Brown, 2021). AfL is a big step in terms of conceptualizing assessment as an integral part of learning; rather than just a summary of learning, AaL takes a further step in advocating the role of the assessment activity in maximizing learning opportunities and student responsibility in the assessment process (Yan & Yang, 2021).

6. Conclusion

In order to assess the effectiveness, efficiency, fairness, and acceptability of technology-based AfL and AaL, it is essential to consider the perceptions of teachers who utilize these technologies in their teaching practices. Teachers can gain insight into their overall efficacy by reflecting on how these challenges inform their teaching and aid in monitoring, supporting, and communicating student learning. They should also evaluate the resources, time, and preparation required to implement these practices effectively. Students can contribute to this evaluation process by sharing their perceptions, identifying both effective and ineffective aspects of technology-based assessment, and suggesting how it could be enhanced to improve its efficacy. This collaborative approach to evaluating technology-based assessment can help ensure it is utilized to support effective teaching and learning (Schellekens et al., 2021).

Using technology-based AfL and AaL alternatives can benefit students and teachers. Using technology to construct assessment products can empower students to gain educational, interpersonal, professional life, workable, and technological skills simultaneously (Alwan et al., 2007; Wolf & Lopez, 2022). Teachers can use these practices to supervise students' learner achievement and apprise their instructional decisions. Use these practices gradually, tunnel the technology gap, educate students to be good digital participants, preserve students and their work, and stay current on new technologies and assessment strategies. Teachers should also thoughtfully assess the different technologies to pinpoint the most efficacious, egalitarian, and suitable for teaching-learning and assessments. Teachers should also establish how well technology-based assessment practices coincide with their educational program and curriculum content targets.

While the limited number of sample educators constrained the research, the short duration of learning observations, the lack of diversity of research participants due to the small number, the lack of quantitative data to cover the response of research participants, the absence of respondents from the government or policy maker to compare the data from teachers, so the perceptions of the government have not been explained more objectively in this study, the study findings offer valuable insight of implications for further studies. For future studies, technology-based AfL and AaL require specific or standard guidelines or instructions to accommodate teachers' and students' implementation easily, so it is highly recommended to develop the instructional model of technology-based AfL and AaL including for accommodating the students' differences, students' needs and students' lack. Furthermore, it is highly suggested to increase the number of participants for future studies to dig deeper into the teacher's ideas, curiosity, or even lack, and the interview questions need to be added. For policy-makers or governmental entities, it is imperative to engage in thoughtful policy deliberations to expedite the establishment of internet networks to ensure universal access across all Indonesian regions. This effort is essential to facilitate the seamless integration of technology-based assessments and other educational endeavors within the digital era.

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