CHAPTER 1
INTRODUCTION

In today's rapidly evolving educational landscape, the effective teaching of English pronunciation stands as a crucial component of language instruction. Recognizing the significance of pronunciation in language learning and communication, this chapter endeavors to explore the scientific evidences and common futures that will contribute to the preparation for implementation of innovative pronunciation learning resources in senior high school settings by establishing its value as English pronunciation learning resource.

1.1   Background of the research

The worldwide standardization of quality education has found its newest compassions. Enormous of international education-concerned organizations has contributed to the global compassion of quality education by publishing their concerns. Collective action to internalized vision and accelerate the process of transforming education was urged by well-established educational, scientific and cultural organization, UNESCO through the new and renewal of global quality education, contract for education. The transformation hits the teaching and learning practice that is supportive for learners in transformative way; get people connected local and globally, creating chance to new possibilities, and intensify students' capacity for critique, dialogue, knowledge creation, and action (UNESCO, 2021). The fulfillment of those ideal perception of transformative education is a real deal for some countries with their own orientation of teaching methods. This orientation will then determine how they perceive flexibility of teaching methods (Alwasilah, 2013). It will open for the new forms of knowledge and culture in the transformative education.

Transforming education in the changing world is a challenging act. The world has struggled a lot with COVID-19 Pandemic making all sectors including education undergoing an 'unfinished' learning as it globally suffered in access and the learning outcomes (Bryant et al., 2023). This global phenomenon raises a significant response all over the world to make up the education system while working on Quality Education globally. The proportionate response was initialized by multi-scale stakeholders; UNESCO with Transforming Education (Global), ASEAN in commitment to SDG 4: Education 2030 and the ASEAN Future of Education Manifesto (Valenzuela, 2023), and Indonesia Government in the current curriculum, Kurikulum Merdeka (Emancipated Curriculum) to cope with learning crisis due to the wide-ranging pandemic (Direktorat SMP, 2021). In relation to the quality education, all these stakeholders and their responses to global pandemic aim for the 'learning recovery' in all areas, including language education.

The systemic change for quality education aligned with SDGs covers the act of promoting sustainable development. The sustainable development will have it embedded in education for sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (UNDP Quality Education, 2023). The education for sustainable developments shares the same concern in sustainable lifestyles with National Science Foundation, particularly in the notion of Future Learning. NSF commitment in sustainable lifestyle managed in the program called Cyberlearning and Future Learning Technologies. The program exists as the NSF's respond to the emerging technologies offering opportunities to the advance of future learning (National Science Foundation, 2017). This orientation of education for sustainable developments was then open for broader context, including the Cyber Language Education. Simultaneously, it will also validate researcher's intention to work on the use of technology to make new

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creation of knowledge in synergize with what is known of how people learn the working language in ASEAN, English.

Between many subjects being taught in multi-level education in Indonesia, English subject has no exception to be taken into account in cyberlearning framework. The approach of English learning in Indonesia is undergoing the English as Foreign Language (EFL) (Ayu & Inderawati, 2018). Comparing it to another approach of English learning in ASEAN, such as English as second language (ESL), the two approach is arguably indicating some differences in their practice. The major difference between the two is in their context; ESL has intended to facilitate the learners to have sufficient English proficiency in communication within certain English-speaking country, while EFL is more into interest-oriented or personal reasons, such as academic study and self-improvement in English fluency (ESL Courses, & Herbert, 2023). The characteristic of EFL is imperative to create the cyberlearning innovation that meets the need of people involved within the approach.

Cyber Language Education has oriented by indicating the integration of technology and pedagogical aspect to embed in. The scientific integration of potential technology and how people learn English to attain English fluency should be prioritized for the best practice. The language fluency is attainable with the best comprehension. In neurological perspective, English language comprehension takes automatic listening mechanism guaranteed for its best. Apparently, it is known that cognitive fluency plays vital role in human comprehension (Luu & Lian, 2021). There are three interconnected parts of human fluency mechanism; cognitive fluency, utterance fluency, and perceived fluency (Segalowitz cited in Luu & Lian, 2021). Working in improving English language fluency means to work on all of its interconnected parts contributing to not only listening skill, but also pronunciation improvement. This also helps to introduce the interconnected concept of Cyber Language Education that is feasible now

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by leveraging one of its essence, neuroscience, into a knowledge creation. In this case, we will highlight the essence of cyber language education by incorporating neuroscience into a CALL Project for pronunciation learning.

Embedding Cyberlearning to embark the transformative English language learning is critical not only for Indonesia, but also for ASEAN context. Practically, it requires not merely integrating insights from neuroscience in how people learn with potential digital tool, but also to investigate its utility for multi-level practices would possible. This will validate relevant framework such as CEFR Framework for Digital Learning Resources, A-A-R cycle in OECD Learning Compass 2030, ASEAN Curriculum Sourcebook, and other Learning Framework in Language Learning established by experts to work with and ensure its quality. Research about pronunciation improvement has proven that the Cyberlearning Principles has not sufficiently embodied in English language learning for ASEAN context. Therefore, the research and development on digital learning resource for English Fluency through pronunciation study of EFL-context in Indonesia is imperative to be immediately manifested.

1.2 Identification of the issue/phenomenon

The major agenda of quality education proposed by UN is synergistic with Ecological and Socio-Economic Development for the Digital Society and Green Economy Manifestation. The implementation of this agenda has indicated the possible policy integration in the notion of 21st Century Learning and / or Competency, specifically in lifelong learning/competencies. The "Framework to Action" for SDGs in 21st Century Learning and / or Competency illustrated in the following:

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FIGURE ES-4. The five principles of the framework
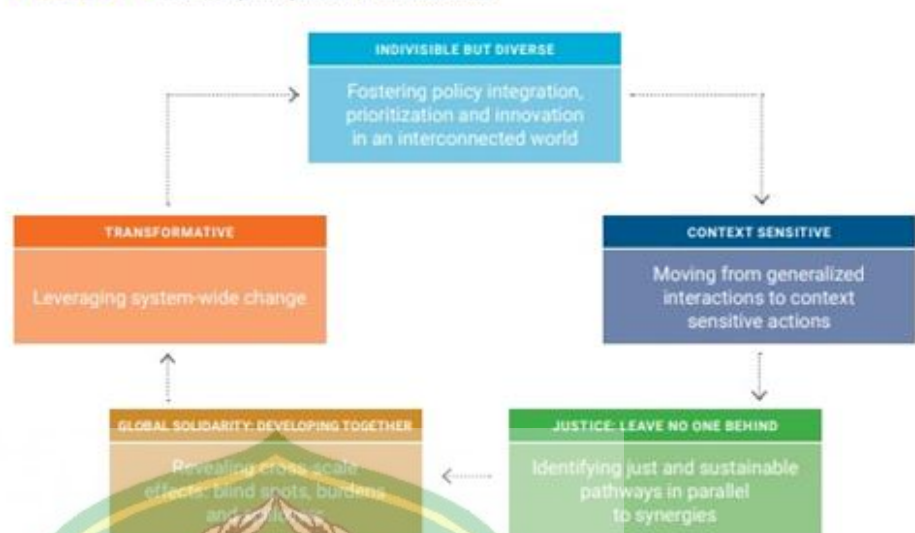
Figure 1.1 The five principles of SDG Framework to Action

The European Union has responded to the quality and inclusive education with the Programme for International Student Assessment (PISA) which Indonesia has consecutively taking part of.other organizations. EU has been also responded by adopting a Recommendation on Key Competences for Lifelong Learning; *1) Literacy, 2) Multilingualism, 3) Numerical, scientific and engineering skills, 4) Digital and technology-based competences, 5) Interpersonal skills, and the ability to adopt new competences, 6) Active citizenship, 7) Entrepreneurship, and 8) Cultural awareness and expression* (European Education Area by (European Unions, 2023). Since this council recommendation claims for successful ways specifically in innovative learning approaches, it will contribute to lead the upcoming research. Aligning to the UN's major agenda in quality education is also the conceptual learning framework, OECD Learning Compass 2030.

By integrating opportunities from the emerging technologies and the science of how people learn, the program sheds the light for new, dynamic, and sophisticated learning experience, Cyber Learning. This NSF program practically shares their method to cyberlearning by committing on some practical movements; *1) Applying scientific insights about how people*

learn, 2) Leveraging emerging technologies, 3) Designing transformative learning activities, 4) Engaging teachers and other practitioners, 5) Measuring deeper learning outcomes, 6) Emphasizing continuous improvement. All the movements are synergetic for embarking its three interconnected thrusts; *1) Cyber Innovation, 2) Learning Innovation, and 3) Advancing Understanding of How People Learn in Technology-Rich Learning Environments.* The term Cyberlearning need to be integrated with the regional commitment concerning transformative education.

Helping us to the orientation of transformative curriculum in Indonesia is also ASEAN Curriculum Guidance. ASEAN Community exists in part of the commitment in upgrading the well-being and livelihood of people within the region. In other words, ASEAN community has agreed to collaboratively work on some goals; ASEAN-based universal access to primary education, to eradicate illiteracy, to manifest gender equality in educational settings, to improve quality and adaptability of education, promoting lifelong education through the use of ICT, and to teach common values and cultural heritage (The ASEAN Secretariat cited in Bumela, 2021). This insight has relevantly resourced from the 21st Century Skills (Bumela, 2021) The orientation of the transformative curriculum in Indonesia so far has to deal with 21st Century Model of Curriculum yet still going 'down-to-earth' with some informed framework intended to make it regionally relevant. In order to be a lifelong learner, educators need to be aware of different aspects of curriculum design, such as critical analysis, political perspective, and generative perspective. It goes on to say that, in order to prepare for questions from students, educators need to have a knowledge of these approaches (Lian. A, 2022, August 20). Finally, the video suggests that, in order to be a good educator, one must be able to critically analyze their own work and that of others.

Engaging with some informed regional agenda (by ASEAN) will be helpful in this matter. The curriculum in ASEAN community should features the promotion of regional identity of the ASEAN Community

(Hirata Toshifumi and Morishita, 2022). Considering the Key Concepts of Citizenship Education in the ASEAN Community embedded; ASEAN Identity and ASEANness Education, it will make the prioritization of the ASEANness Education Curriculum. The implementation of curriculum lead by its transformative orientation and assisted by ASEAN Curriculum Sourcebook as teaching resource is crucially suggested by the ASEAN Secretariat to build cultural-interconnectedness as well as 21st century knowledge and skills. In context of ASEAN Integration in Language Learning, schools have been confusedly struggling to provide the relevant teaching materials and varying the practice of learning (Stroupe & Kimura, 2015) Accordingly, they might have potentially diminished by the implementation of transformative curriculum. The ASEANness Education Curriculum with its concept and framework now is promising to have its outcome/output evaluated. There are five sub-criteria to assess the workforce of The ASEANness Education Curriculum (ASEAN Work Plan on Education 2021-2025by ASEAN. Secretariat., 2021); *1) Criteria of how ASEAN Awareness developed, 2) Criteria of regional capacity in gender-equality-based access for quality education, 3) Criteria of lifelong learning provision in higher education, 4) Criteria of quality initial and continuing Technical and Vocational Education and Training (TVET), and 5) Criteria of effective implementation of ASEAN Education Work Plan; improved coordination, knowledge management, and M&E system.*

While the worldwide has transformative education embarked the phenomenal re-design of their quality education, it seems to have additional 'homework' for their re-design education agenda. This is due to the continuous decline in the productivity of the educational system recorded by some well-established statistics. The statistics openly shared by the organizations concerned mainly with educational issues. PISA by OECD, is aiming to portray the state of knowledge and skills among students in all over the world, including the Indonesian students. Adding to this decline phenomenon, the government seems urged to working hard on the common

working language of South-East Asia, English. At PISA (2018), it served Indonesia at rank #74 over 79 countries in reading performance. In linguistic performance, it is recorded by EF EPI (2022) that Indonesia ranked #81 out of 111 countries, which is categorized in low-level competencies. Both have mandated the consequential message to the policy-makers to transform and improve the education, tackling the learning crisis happening. It is even on UNICEF (2023) call for governments, policy-makers, partners; young people, parents, etc.

Complicating this matter is the dominating traditional learning practices that has been resulted in low-spirited ranking given to Indonesia for years. This is followed by the drill of traditional learning devices and practices in Indonesia. In other words, the concerns to the notion of improving Indonesian education merely cycling on classroom experience and program quality (Kimpo Ellen & Bumela Sudimantara, 2023) Traditional Learning literally has been failed us nowadays. If the challenge is to cope with the disparity recorded and warned by so many reputable organizations, then the best practices should be manifested in near future. The "doing more of the same" should not be reoccurring for the targeted substantial improvements (Lian & Sussex, 2018). The same practice of traditional teaching will only embrace the academic goals of the curriculum, while we're supposed to have intellectual-based goals, remarking on the initial step to transformative education. The intellectual-based education is transformative because it reflects on what it takes to be transformative education; technology, resources, pedagogical aspects, students' freedom, and creativity (Sudimantara, 2023). These generic elements of transformative education will lead to the effort of embracing new ways of knowing by seeking into what we've known from the growing interdisciplinary evidences. To embed these orientations of transformative education into a Cyber Language Education, it happens in the effort of incorporating neuroscience into CALL project for intellectual based learning, embracing not only concrete thinking but further away into the

abstract-thinking activities. Abstract thinking matters in the way of how students' decision-making evolved (Bumela, 2020). In ASEAN context, the CALL project will align with five principles of learning (Lian & Sussex, 2018). This will help to get the orientation of 'critical thinking' as built in emancipated curriculum not just a buzzword for violating the interconnected human ways of thinking, between concrete thinking and abstract thinking.

Take a look at some learning devices and practices nowadays, there are still grammar-based contents and activities and memorization-relied learning that has been proven to not embracing the full potential of both hemispheres of human. The passive learners and passive learning are troublesome for continuously happening in common. It is a must to find the alternative that is innovative compare to the prior issues. The Non-Traditional Learning should immediately arise hand-in-hand with informed decisions taken within hitherto policy. One of the major reasons to this is due to the growing minds features of young students (LearnOBots, 2022). Education nowadays should be in their stance, giving the supposed merit for their education.

The major mechanism that Indonesian ministry of education culture currently undergoing is Kurikulum Merdeka (Independent Curriculum). It has some fresh features to come up with, such as flexibility given to the educators and improved quality of learning within its implementation. Compare to the prior curriculum, it also has some new adjustment tailored to its main concerns, such as the learning needs concern and learning environment concern. Learning needs concern was illustrated within its characteristics; 1). The development of Soft-Skills and Character and 2). Focusing on essential materials. Furthermore, the learning environment concern interpreted the curriculum mechanism supporting the flexible learning practice (Kurikulum Merdeka Kemendikbud, 2023). With all of those breakthroughs for Indonesian education, it is impressive yet questionable for its perception on essential material for lifelong competencies.

Addressing to this problematic reality, some suggested adjustments has been delivered by researchers that shares the same concerns. The inevitable implementation of traditional pedagogy even in the era of emancipated curriculum being the influential issue contributing to this matter along with students' decreasing motivation and the irresolute language policy (Putri et. al, 2019). The continuing decline in Indonesian English proficiency Index has to come to end in soon. Working on those three underlying matters will be very helpful and effective by integrating the newest organic evidences by well-established organizations in relation to manifest the urging 21st century learning in Indonesia.

Our orientation of improving Indonesian education is objectively cleared. It has to do with current Educational Policy, Curriculum, and Pedagogy. The running policy with its objectives is still immature for inclusive education. The curriculum is still green-lighting the insolvable traditional learning. Furthermore, the Indonesian pedagogy is not relevantly implemented since the scientific evidences suggested by experts are omitted. It is time to transform Indonesian education, shifting away from traditional learning to non-traditional learning, through transformative education.

In transformative education, some educational policies owned by a country must be relevant with the most up-to-date vision by the allied cross-cultural organizations. As part of South-East Asian country, Indonesia has actively engaged with its cross-cultural organization, ASEAN and internationally in partnership with United Nations (UN). As a UN member, Indonesia has committed to global commitment mobilization and action (Kemenlu, 2023). This commitment has led to its follow-up vision, the Sustainable Development Goals (SDGs) that have been respectively reported since 2016. It has featured with 'Framework of Action' aiming to systemic change in the complex synergistic action and assessment to record their transformative potential (UN Climate SDG Synergies Report, 2023).

In regards to tackle global challenges in educational policy, Indonesia is still struggling to establish the lifelong competencies in their educational policy. It has suggested for *inclusive and equitable quality education and lifelong opportunities for all* (SDGs, 2023). However, our policy has misperception towards lifelong opportunities. The implementation of learning activities in P5 (Pancasila Learners Profile Development Project) to foster the 21st century curriculum effectiveness and efficiency in Indonesia is reformative and solid, but the other novel characteristics is questioned for its mobility to face social changes. Essential materials in emancipated curriculum known for its focus on merely on literacy and numeracy skill (Rizki & Fahkrunisa, 2022). If the case is to create life-long learners, why should we limit the focus in two? They will make this notion of curriculum vague compare to the previous curriculum, aren't they? This also validates the problem existing in emancipated curriculum and pedagogues such as the slow-progressing adaptation by schools to the new curriculum that force them to maintain the use of K13 (2013 Curriculum) model in its current implementation (Syarochil & Abadi, 2023). The flexibility given to teachers will be also a problem if the setting dominantly remains in K13 model.

Moving onto the orientation of pedagogy in adoption of English for transformative education, it is struggling with passive learners and passive learning that is not leveraging the technological potential. It should have theoretically relevant and leveraging the technology-rich potentials to stop contributing to learning crisis. The key factor of its implementation is the scheme of cyberlearning that would foster key competencies for lifelong learning in the ASEAN schools. Indonesia already has one correct perception in transformative education, the use of essential materials for learning. Unfortunately, the ministry fails in defining the essential materials in English learning for narrowing the definition into the materials to foster literacy and numeracy.

When it comes to addressing learning crisis within the context of Cyber Language Education, the philosophy of 'Less is More' is relevant to use. In the world which ineffectiveness of traditional learning still embraced, we need a pedagogical approach that is offering deeper learning outcomes in the most efficient way, supporting the transformative learning. We could imagine a transformative learning in this way; if today it takes 10 years in school to learn grammar, then with knowledge creation in the near future, it only takes one year to learn it, this is how the transformation of education supposed to be (Lian in Black et al., 2016). In other words, simplifying the way we learn and the materials to learn for broader and deeper knowledge acquisition is the most optimal way to transform the education. Considering Cyber Language Education concept that is embracing the way human learn, integrating neurological perspective on learning, including the science of human perception, into knowledge creation will be imperative.

The science of human-perception has revealed that the most optimal brain condition for language learning is when the both hemispheres are equally embraced for its potentials for adequate amount of explicit emotional and linguistic prosodic perception (Witteman, 2014). This is indicating the reformation of essential material for English subject. The perfect orientation for this transformative intention in English education practice is "Embracing the Essentials, Not the Basic", where The Non-Verbal Components of Language is prioritized compare to Verbal-Components in English language materials, making Rhythm to be the DNA of human language. (Helyanti & Bumela, 2022). This goes hand-in-hand with proposed learning framework in ASEAN. The learning framework is profoundly coming up with some new approaching integration to best comprehension of English, verbotonalism with prosodic-based multi-sensorial learning activities. Those notion to work with is inevitable for designing digital English learning resources since it is aligned with the principle of Cyberlearning for transformative curriculum in ASEAN.

1.3 Limitation and focus of the research

To transform the English language learning in Indonesia calls for holistic approach for English proficiency improvement. Even though this research has the interconnected elaboration for three major concerns in this research; Policy, Curriculum, and Pedagogy through transformative education, it has been arranged purposefully for being relevant to merely the need of pronunciation study in EFL context in Indonesia. Therefore, further elaboration for broader sense may requires the more universal and considerate elaboration between the three concerns. The research focus is to foster life-long competencies through the scheme of cyberlearning in EFL context in Indonesia. This focus was then led the research to work on digital English learning resources through the attempt of *'Designing A 'Stream of English Sounds Book' With CEFR Framework Integration for English Fluency: A Senior High School Pronunciation Improvement Study'.* In this matter, the prosodic-based learning framework will be applied on a website for digital English learning resources featuring only one narrative series of Aesop's Fable to enhance students' pronunciation that has adjusted in accordance with students' current CEFR level. Up to this point, it is clear that the focus of research belongs to the urge of creating and investigating digital English learning resources for transformative education in EFL within ASEAN.
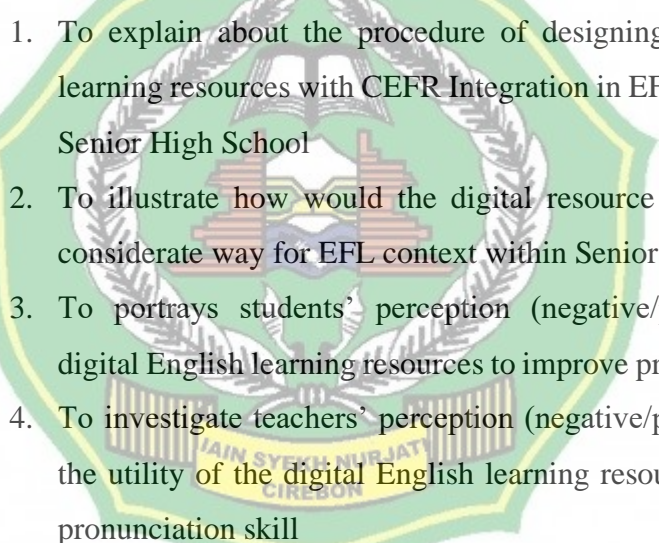
1.4 Research questions

a. In context of digital English learning resource development, how is the 'Stream of English Sounds Book' designed to integrate with the CEFR Framework?

b. Within the implementation of the new curriculum, how will The 'Stream of English Sounds Book' be embodied in high school classrooms, and what methods will be used to ensure its integration's quality?

c. How was the perceptions and feedback of high school students during their discovery of 'Stream of English Sounds Book' in context of pronunciation study?

d. As an innovative CEFR-aligned digital pronunciation learning resource, how do high school teachers recognize the utility, challenges, and benefits of the 'stream of English sounds book's implementation in classroom?

1.5 Aims of the research

According to the comprehensive and contextual research questions above, it is clear that the aims of this research is as follows:

1. To explain about the procedure of designing digital English learning resources with CEFR Integration in EFL context within Senior High School

2. To illustrate how would the digital resource implemented in considerate way for EFL context within Senior High School

3. To portrays students' perception (negative/positive) to the digital English learning resources to improve pronunciation skill

4. To investigate teachers' perception (negative/positive) towards the utility of the digital English learning resources to improve pronunciation skill

1.6 Significances of the research

This research was profoundly proposed to validate several educational advantages in language learning:

1. This research intended to transform the language education in Indonesia by informing and helping students to experience new and sustainable innovation in language learning, Cyberlearning experience.

2. This research also intended to illustrate the best practice of self-managed and personalized language education in Indonesia through a digital English learning resource

3. This research also contributes as a solid model of transformative education in ASEAN EFL context to enhance English Fluency

1.7 Theoretical foundation

a. Human Nature of Language Learning

Brain is a human organ functioning in complex information-based system. In regards to human learning , the evidence derived from the science of brain, Neuroscience will reveal the secret of human learning , particularly in language information-processing. It is true that one particular region of human brain may have its specialization in information processing, but in every one time, it happens to have stillness in what activity happens in one other region, both of the regions (hemisphere) still doing something in one time. These two regions are dominantly present in human mental processes (McGilchrist, 2019). Information processing in both hemispheres cope with individual meaning-making mechanism, facilitating the acknowledgement of the familiar and unfamiliar (Peterson cited in Lian, 2018). This is also validating that the 'strategic' manner of brain in part of information-processing phase, perceive a problem. The problem proceeds in human brain thanks to the orienting reflex, a reflex directing one's attention exactingly to anomaly (Lian, 2018). This ability of human perception towards anomaly is valuable to the problem-solving in learning. Its mechanism towards anomaly helps human perception being conscious to not stay in 'comfort zone' (Bumela, 2021). This is where decision-making is embraced.
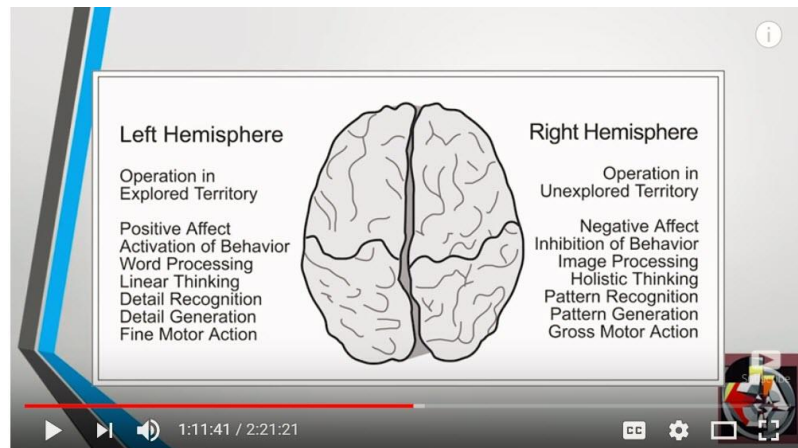
2017 Maps of Meaning 8: Neuropsychology of Symbolic Representation

Figure 1.2 How People Learn by Professor Jordan Peterson

The structure and function of the brain indicates its specialization in creating human perception throughout learning context. Human brain anatomy in neuroscience perspective highlights most benefits for human learning within the cerebral cortex structures. It has four major lobes/areas corresponding to its separated tasks for particular information processing. Occipital lobe works toward the visual stimuli in primary visual perception area to perceive actual object then transmit to visual association to check if there's prior visual information stored, just like how we will focus on essential information in learning. If there are visual stimuli, then auditory stimuli should be proceeded too. Temporal in both sides of upper side of our ears has subsections corresponding to the hearing, language-processing, and hearing-focused memory (auditory memory). The most area of Wernicke's area, the vital region of human brain to process speech, lies in temporal lobes, along with occipital and parietal lobes (Wolfe, 2010). The two lobes to identify known for its neural correlates to the

intelligence of men and women, Parietal and Front lobes. It's said that men's intelligence lies on both parietal and frontal lobes, while in women it is merely the matter of frontal lobes. Parietal lobes are located above our head and working on complementary roles of perceiving sensory stimuli and pain to have the spatial focus maintained (Churches et. al, 2017). Finally, the most complex functioning lobe of human brain, frontal lobes, is in charge of emotional self-regulation in behaviour personality, learning, and voluntary.
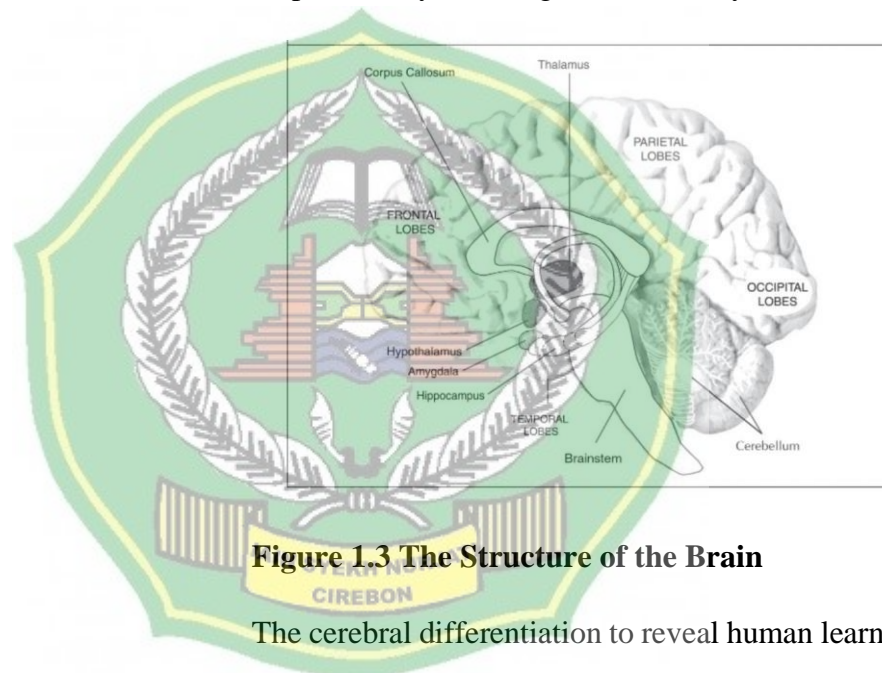
Figure 1.3 The Structure of the Brain

The cerebral differentiation to reveal human learning from neuroscience perspective is also imperative to the Brain lateralization concept. In some researches, brain lateralization contributes to explore an optimal auditory language signal to process by language learners. The nature of brain lateralization rises from the advantage of hemispheric pathways. Depends on how the hemispheric pathways leveraged or not, comprehension of the auditory signal may be affected. The advantageous pathways of human hemisphere orients on predisposition-based optimization, where left and right ear assumption for

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prosody and verba signals optimized to show the optimal auditory signal is consistent with the assumption (Lian et.al, 2021). This is how far the brain lateralization evidence has been innovatively leveraged to find the best practice for transformative learning.

Rhizomatic approach elaborated in neuroscience perspective is transformative by focusing to reform students' perceptual systems. Intellectual framework of this approach leads by the question: *""How do we make sense of the world?"*. This also validates the narrative of learning in transformative education; *we have to make sense of what is happening: we generate meanings.* The idea of filtering individual personal logical and representational system sheds the light on how do people essentially perceive and make sense of the world. Technically, it calls for set of comprehending acts that is toilsome for people's past (Lian, 2004). In the scheme where the complex events is happening, "act of comprehension" is a catalyst where individual needed to confront what is waiting for them, contrasting information to engage within, and contest their perception or understandings and beliefs. This approach should not be separated, it supposed to be coherent yet flexible to use (from one point to another) in pedagogic and technical environment (Lian, 2014). This is because it is where the spirit of individualization and self-adjustment embraced.

The rhizomatic approach revealing the human learning has suggested that it is important for individual to be concerned in every event of their life. This is to make it meaningful for their learning-to-learn skills polished through

the concrete experience they had. The concrete experience assumption is cycling for human to learn, hence it is called 'learning cycle for experiential learning' (Azizah, 2023). The region of brain corresponding to initialize this cycle is sensory cortex, where three stages of learning cycle happen to continuously processed; 1) reflection through the integration of, 2) development of abstractions within the frontal cortex, and 3) active testing of abstractions within motor cortex to create concrete experience (Zull, 2020). From now on, it is clear that this brain circuitry stimulated by sensory input thanks to the concrete experiencing stages.

b. Story Science

Human perception importantly viewed the ideas, thoughts, and concepts as they are living rent free. Our brain is so layered and complex to the extent it always spares some energies to respond any stimuli, even though it is just our thoughts; physically unreal yet solid to human sense. While it indicates that delusion is integral part of our thought, it also highlights the power to imagine of human perception (Lotto, 2017). It perceives thought as historical components that made our currents and the building blocks for futuristic behavior.

For educational purposes, this kind of potential of individual should be respected through the elaborative interventions of education. This is what makes students learning effort worthwhile (Lian & Sangarun, 2017). Accordingly, some principles accelerating the effective intervention of education should be established: 1) Education is supportive for appreciating and respecting learners' unique mechanism in making sense of the world, 2). The support within the learning activities should have

included the synchronized awareness-raising activities, and last but not least, 3) Embracing individualization of learning (Rhizomatic) (Lian & Sussex, 2018). This narrative will importantly validate the multi-sensory learning approach as one of transformative components of education.

In making sense of the world, our brain responds to the stimuli sensed by our five senses. The world that the brain seeing and/or hearing stimulating our attention towards it, making our brain preferred to one's story. That's why our brain likes stories, the clearer narratives it given, the clearer us to cut distractions, helping us to pay attention. This interesting evidence caused by the unique mechanism of brain towards stories, neural coupling. It is where we are having our neurons in our brain in the same patterns as the speaker's (mirroring) (Bauer, 2021). This occurrence involves many different areas of the brain and open to shared contextual model originated from the story we pay attention to. The motor and sensory cortices, as well as the frontal cortex are all engaged during story creation and processing. These networks are nurtured and solidified by feelings of anticipation of the story's resolution, involving the input of your brain's form of candy, dopamine.
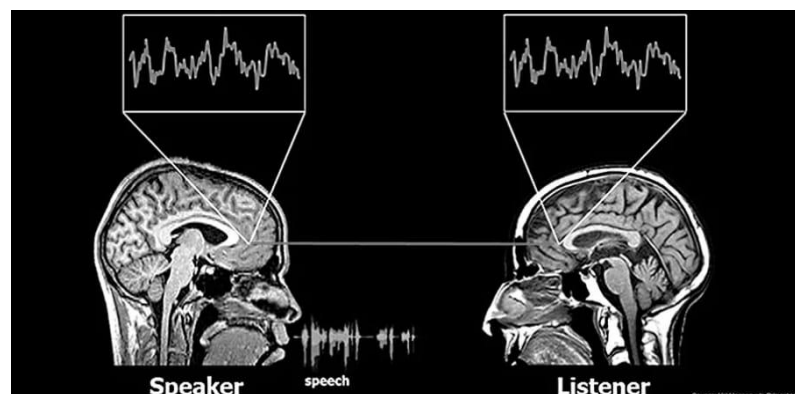
Figure 1.4 Story processing through Neural Coupling

That's why when we experience an emotionally-charged event or hear a story of the same nature, certain parts of our brain release excess dopamine, making it easier to remember something with greater accuracy. The underlying mechanism to this is narrative transport; good stories engage listeners emotionally, make them feel connected. Making the story memorable charged for imagination and story work towards this orientation of natural power of story; emotionally impactful stories trigger greater individual's behavior than factual reporting (Ariel Group, 2017). The power of narrative that storytelling holds reveals that any act of educational purposes must profoundly transformative for students, promoting new and renewal for them in the way that they are emotionally engaged in their learning to transform their behavior.

c. OECD Learning Compass 2030

OECD Learning Compass 2030 introduces the concept of shifting away the educational mechanism due to technological, social, and economic changes aiming for 'helping' countries to the preferred futuristic education. The Learning Compass 2030 itself has to do with some conceptual and practical agendas; 1) Core Foundations, 2) Transformative Competencies, 3) Student Agency/Co-Agency, 4) Knowledge, 5) Skills, 6) Attitudes and Values, 7) AAR Cycle (Anticipation-Action-Reflection) (A Series of Concept Notes, OECD Learning Compass 2030, 2023). In contributing to human intelligence, it sets goals of future of education to have students' well-being equipped with key knowledge, skills, attitude, and values across greater aspects; literacy and numeracy, data and digital skills, physical and mental health, and social and emotional skills. The overall orientation to the

futuristic educational policy so far will contribute to embark the development of innovative digital learning resources in align to Indonesian context.

The key competencies as perceived by OECD Learning Compass 2030 distributed in three transformative competencies; creating new value, reconciling tensions and dilemma, and taking responsibility. Corresponding to the nature of emotion through story, the guideline indicates that students engaging in learning by the stages of creating new value: ask questions, collaborate with others and embracing 'out of the box' thinking to find innovative solutions to foster critical thinking and creativity. This linked to the scientific evidence of creating new value, where it embraces the human power of storytelling to think and importantly recalling and reconstruct events in their memory throughout story (Fletcher, 2021). Confronting the contradictory or incompatible logics trains them to reconciling tensions and dilemma by leveraging their empathy and respect. Students profile in the guideline is urged to have the education allowing them to have considered reflection, cooperability, and respect for the planet as well (OECD Transformative Competencies, 2019). To attain this profile, the capacity-building investing on students' strong compass on responsibility-taking. This indicates the concept of students' agency; the art of learning-how to-learn.

Responding to the respectful concerns of students' ability to influence their own lives and the world around them is OECD Students' Agency 2030. It calls education system to internalize the co-construction towards students' agency along with the instruction and evaluation in cooperation with students, teachers, parents and communities, where the co-agency became true (OECD Student Agency 2030, 2019). It allows students and teacher being co-creators in teaching and learning process that helped each other to

achieve the shared goals. In language learning, concerning learners' agency investment within its learning context is transformative to the students' meaning-making mechanism. As informed by neuroscience, embracing students' agency must goes hand-in-hand with the reflection result on human learning. In other words, different approach suggested from the reflection will be used; multisensorial-multicognitive pedagogy (Sudimantara, 2021). This is inclusive to the advantage of psychological components in learning such as rhythm, intonation, movement, emotion, and aesthetics.

d. CEFR for Learning Individualization and Self-Adjustment

Six levels of language ability, A1 through C2, are arranged by the CEFR. These levels can be further divided into three categories based on the demands of the local context: Basic User, Independent User, and Proficient User. 'Can-do' descriptors are used to define the levels.
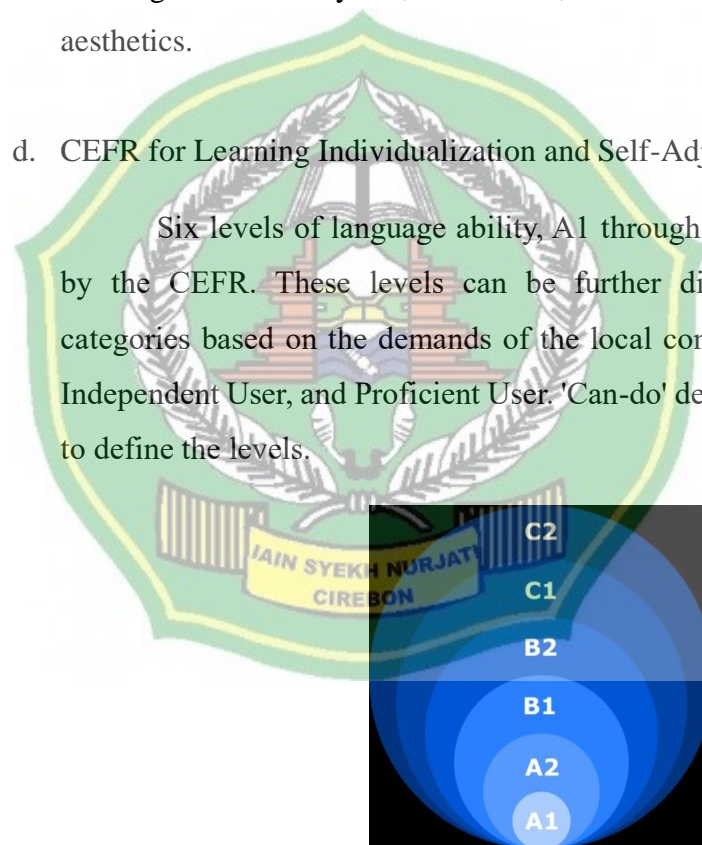
Figure 1.5 Six Levels of Language Ability of CEFR Framework

Supporting for students' strong learning compass on English language learning is CEFR Framework Integration. While students working towards their shared goals, they have the acceleration to their knowledge by acquiring language proficiency to open broader resources of knowledge. However, due to the language proficiency

gap, students often too pressured whenever they find someone else having better proficiency in English, making them 'too hesitate' to catch their own progress on language learning. This is what CEFR framework facilitated, it directs students to consistently work on their progress in the sense of respecting self-paced learning path fostering the value of individualization and self-adjustment in English language learning. Such a fresh concept to English teaching and learning since it serves conduciveness of operational appropriation of unknown languages (Council of Europe Portal, 2023). With this in hand, it is enlightening students to the pinpoint knowledge and 'know-how' materials for their learning.

e. The Conceptual Framework of "A Stream of English Sounds Book" for Senior High School

Some concepts responsible for the importance of constructing an intellectual framework, and how doing so is important when doing research. It has been pointed that while it is important to start making decisions about what research project to undertake early on in one's academic career, doing so should not be done in a way that leads to an inflated ego or a disregard for other academic disciplines (Lian. A, 2022, November 19). Rather, dialogue between different academic disciplines should be encouraged so that students can gain a greater understanding of how research is done and what constitutes a good research project. This framework will work on the need for a deeper understanding of the intellectual framework of teaching, including exploring different concepts and approaches (Lian. A, 2023, June 17). The verbotonal-based website and Reading for Emotion integration will pave the way as in the following.

Verbotonal-Based Website: Sensitization on the Intonation and Rhythm of High Schoolers Pronunciation

In alignment with students' agency, any cross-disciplinary development on innovative learning tools will be imperative to construct the transformative education. To support such agentive environments, three-in-one tools have developed to meet this need. This is in response to the use of technology in traditional universities, and the importance of going beyond simply teaching content. It highlights the concept of digital building, which integrates technology and pedagogy in order to offer a comprehensive and transformative educational experience, rather than just emphasizing the technicalities of using technology. They argue that this approach can lead to improved learning outcomes and the development of critical digital literacy and ethical digital citizenship. The speaker relates this to their own research on pedagogical multi-social loads reduction strategies and highlights the need for greater attention on the integration of technology and pedagogy, particularly in the face of learning loss in Southeast Asia (Lian. A, 2023, April 29). One of cross-disciplinary integrations contributing to this is verbotonal-based website. The integration of pedagogical evidence with the technological potential happens to be true through reforming students' perceptual system of language learning. In this case, the production of learning tool correspondent to Sensitization on the Intonation and Rhythm of Pronunciation highlights the critical role of the sound codes of human speech (Sudimantara, 2021). This allows the initial stage of pronunciation learning by listening practices with the focus on rhythm and intonation of prosodic-based auditory input.
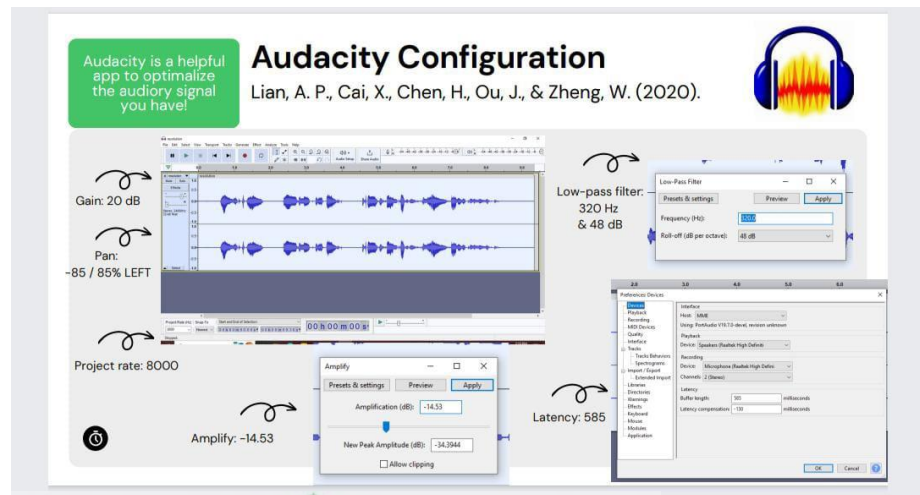
Figure 1.6 The configuration of FL-R auditory signal produced with Audacity

Validating this practice is the evidence from neuroscience perspective on brain-lateralization advantage for language learning; language is optimally processed when non-verbal components in right-hemisphere (rhythm, intonation, emotion, movement) precedes the verbal components in left-hemisphere (Jackendoff, 2012), (McGilchrist, 2010). The dichotic listening based on brain-lateralization is used to guide the production of optimal auditory input. It also aligned to the importance of paying attention to intonation and melody in listening comprehension, which is often overlooked in language teaching curricula. She discusses how her own experience showed that even in her graduate studies, the focus was still primarily on segmental units rather than intonation. However, by incorporating these elements into language teaching, it can lead to a transformative experience for students and change their mindsets (Luu in Lian. A, 2023, May 27). Initialize by using the Audacity – Audio Editing application to produce low-pass filtered audio that evidently take into account the FL-R signal evidence, the idea of not violating the right and left ear advantages, since it is not advantageous for the left hemisphere to process prosody, and for the right hemisphere to process linguistic stimuli (Lian, 2021). The use

of t the filtered stimuli in the left ear and unfltered in the right ear (FL-R) configuration provided optimal auditory language input by actively exploiting left-hemispheric dominance for language processing and right-hemispheric dominance for melodic processing in human brain. Each hemisphere was fed by the signals that it should be best equipped to process in accordance to left and right ear advantages (Cai et. al, 2021). The configuration of FL-R auditory signal produced with Audacity is found to clearly stimulates brain to make sense of the input as exposed by active meaning-making process.

The filtered audio plays a role as the produced Speech Stimulus modified for intonation instruction. Pronunciation learning will be put into the context of the facilitation for learners' perception and/or speech production reforming (Li, Lian, & Yodkamule, 2020). This facilitation of pronunciation learning will have it adopting 'Streaming Speech' concept with various kind of multi-sensorial repetitions that allows for comprehensive listening for stimulating students' perception of given sentences in audio. Working with this intensive listening helps them to eventually change their perception by continuously follows the 'motion of learning' in the website platform (Lian, 2004) (Lian & Sussex, 2018). The motion of learning attached to the website of 'Stream of English Sounds Book' here, therefore, consisting of stages of pronunciation learning; 1) Fifteen times of filtered audio repetition, 2) Fifteen times of Filtered audio listening with humming and dancing, 3) Fifteen times of Non-filtered Audio Listening, 4) Fifteen times of Non-filtered audio listening with saying-out-loud and dancing, 5) One time of Filtered audio listening with listening, humming, and dancing, 6) One time of Non-filtered audio with listening, humming, and dancing, 7) Reading the real sentence, and 8) Voice recording to foster manipulation of language.

The website has such potential of virtual learning and social networking for language learning. It is integrative literally for an inclusive language learning environment. The similar implementation by Yang et. al (2017) has showed that it improves speaking proficiency and individual tests: word-reading, sentence-reading, singing and oral interview, as well as five subskills: vocabulary, grammar, pronunciation, fluency and comprehensibility. The context fits this notion belongs to services where learning services are not adjusted to meet students' requirements and/or to fit into any learning styles of each student but also facilitize students that need to have an ability to acquire, analyze and evaluate [academic] information (Boonrasamee et. al, 2019). In addition, the conceptualization of 'Stream of English' allows students to behave in discursive histories. This is the conceptualization allowing them to think and act in certain ways, helping to sensitize them to the systematicities of the target language systems (Lian & Lian, 1997). Incorporating verbotonalism and multi-sensory concepts for this context is estimated to maximizing the conditions of perception by presenting to the listeners a model that makes them better aware of the elements that remain foreign to them (Rancon, 2018). These new concepts integrated in the mechanism where verbotonalism prioritizes prosodic features, it also stresses the importance of synchrony between body movement and speech (Luu, Lian, and Siriyothin, 2021). With comprehensive and systemic 'motion of learning' attached, the claim of website for Sensitization on the Intonation and Rhythm of High Schoolers Pronunciation will not be overclaimed.

English pronunciation learning 'Stream of English Sounds Book' also concerned with personal learning environment. The way onto this goal catalyzed by the practice of shifting away from teacher-centred to student-centred learning environments to practice

with the implementation of this learning resource. The intended practice corresponds to personal autonomy that seems to be growing rapidly as a result of the impact of technological and communication tools together with greater access to information. Engaging with 'motion of learning within, also navigating students to practice the rhizomatic models (He & Sangarun, 2015). This intervention has inclusivity to technical skills and digital storytelling contributed to the development of students' autonomous learning (Wei, Siriyothin, and Lian, 2018). Highlighting of multisensory learning in local context, this pronunciation learning gives hope to the broader multi-sensorial and multidimensional advantages for students' language learning. This kind of incorporation practice within local context has resulted in phenomenal way for similar studies (Azizah, 2023) (Ayuningtyas, 2023) (Koniah, 2023) (Salma, 2023) and (Maryanti, 2023) proving it is multi-dimensional as well. With information and transformative learning activities at will, meeting such transformative competencies urged for the future of education immediately sketches from here.

Reading for Emotions: Narrative Texts as an Emotional Construct

Corresponding to the story science evidence, this research adapting the elaborative tool to leverage the potential of narrative prosodic-based literature audio, Reading for Emotions. According to Helyanti (2022), the potential of integrating the new paradigm of learning and technology demonstrated by the use of Integration of Reading for Emotions and Story Science. This is elaborated via the training of pre-service English teachers in engaging in innovative research activities. In addition, Reading for Emotion is an integral part of o a multisensory and multidimensional approach (Wastam et. al, 2023). The structure of Reading for Emotions used in search of

narrative prosodic-based literature audio of this research portrayed as follows:

Figure 1.7 The structure of Reading for Emotions

The canonical structure of all texts as proposed by Ania Lian: Focus, Disturbance, Dialogue, Development, Resolution, and Moral (Lian, 2021). Sequence developed for pedagogical purposes. This is being one of the concepts of transformative education, which is an approach to teaching that aims to promote change and challenge learners to critically question their assumptions about the world around them (Lian. A, 2022, September 24). According to the video, transformative education is based on promoting change and challenging learners to critically question their assumptions about how they relate to the world around them, which in turn leads to greater awareness of the emotional, moral, cultural, and social aspects of their personal being.

The search of prosodic-based narrative audio that enable the integration of Reading for Emotions and Technological Potential has arrived to be manifested in interesting results. According to Sudimantara (2020) and Lian (2023), each of stage of Reading for Emotions has some specific characteristic to pull; 1) Focus; evoking emotions, 2) Disturbance marks initial problem, 3) Dialogue; carrying the perspective of the problem, 4) Development; the

methodology of carrying moral of story, 5) Resolution; Arranging Findings, and 6) Moral; Equipping recommendation to the audience. Two of Aesop Fables; 1). The Ass, the Fox and the Lion, and 2) Milkmaid and Her Pail have the identical structure of the Reading for Emotions within it, it is elaborated in the creative process chapter.

Aesthetics: Capturing the Intonations of Narrative Text

In standardizing the intonations of narrative text, the law of artistic experience must inclusive to the current study. This law of artistic experience has been developed by A-B Lian (2017) as a foundation for comprehending the rhythm and intonations of academic writing. The two most well-known principles of aesthetic experiences that Ramachandran created, peak shift and grouping, follow the intonation pattern that humans make (Sudimantara, 2020). When it comes to intonation, grouping is similar to the chunking process of intonation, and peak shift is the portion of intonation that receives the maximum stress and pitch. When considering academic writing as a kind of art, the remaining aesthetics principles—contrast, isolation, perceptual problem solving, abhorrence of coincidences, orderliness, symmetry, and metaphor—might still be applicable.

With this Three-in-One tool integrated within the digital learning tools called 'Stream of English Sounds Book', we will once again reinvent a tool that support students in meaning-making processing in pronunciation learning. This digital learning resource

offers load-reduction process to revise students' perception towards the language learned using narrative auditory input. It has core beginnings and sub-sections, framing sequence of emotions with reoccurring themes. Hence, we can see it as a rhythmic experience, as we pronounce the rhythm. Thanks to Reading for Emotions, we can make the motion of learning that will resonate our physiological mechanism and our cognitive system to process meaning-making, making the process of language learning relevantly optimal.

The interactive session occurs when students being helped to see and to reflect on 'what's happening' in the narrative input, the self-investigative approach allowing basic questions given to students will accelerate it in this process. In other words, this rhythmic resonance within The stream of English sounds book will innovatively assist students in building an engagement with the input/text without relying on the linguistic descriptions and grammar or vocabulary in the way it activates sensors from the body and the brain in the relation of pronunciation learning.

1.8 Previous research

The research of pronunciation-related improvement is apparently showing some interesting results. According to Priya et. Al (2022), the Language and Meaning-Focused Listening using top-down and bottom-up methods is resulted in successful experiment in teaching vocabulary and enhancing pronunciation. The result concluded from the significant improvement through pre-test and post-test among the students. The results may have such practical potential, but there are some critical shortcomings to rise. The setting of the experiment implemented in L2 context, making it deserves second-thought to be implemented in other contexts. Secondly, it insufficiently integrates the nature of human learning for merely brought up the Psychological Processes in Listening. Lastly, it does not promote

autonomy for learners since the reference is only referring from IELTS and Cambridge Assessment English.

The second research of pronunciation-related improvement is more evidence-based for creating cyberlearning environment, particularly for ASEAN context. The research was intended to provide literature review for universal use of listening pedagogy by the integration of neuroscience insights; verbotonal, multi-sensory, conscious-perception-experience and brain lateralization (Septi et. al, 2022). The orientation of listening pedagogy integrated with neuroscience insights in this research gave the new milestone for English learning in ASEAN contributing in perception of nature of human learning, but because it is served in literature study framework, it is still not practical to be implemented. The research that is more practical and considerate of cyberlearning setting in ASEAN is urgently needed.

The third research of pronunciation-related improvement is phenomenal yet still insufficiently attached to the cyberlearning environment in ASEAN. If what is needed for listening pedagogy now is its integration to the cyberlearning setting, then this research will potentially qualified for its implementation in ASEAN context. This research was examining the effects of implementing Optimized Prosodic Approach for improving Vietnamese EFL learners' listening ability (Luu, 2021). The integration of neuroscience insights such as the role of prosody in listening comprehension and verbotonalism in the Computer-Assisted Language Learning resulted in students' positive feedback for the treatment given. The research was very sophisticated and impressive for its utility in transformative education, but it does not mean that this research is flawless. The research is still lack of valuing the cyberlearning setting in ASEAN context for not being inclusive in engaging with teachers for its potential in multi-level education and not sufficiently integrate the emerging potential of Artificial Intelligence in its framework. Secondly, the research conducted

in L2 context, which is may irrelevant for other approach over the world, including Indonesia. Last but not least, the practicality of the learning resources is not DIY-able for further use by learner though researcher had emphasized the importance of self-regulated learning for gatekeep the designing procedure of the learning resources. The missing development in linguistic and culture embedding in learning to become self-managing and Do-It-Yourself (DIY) (Lian & Sussex, 2018). This is critical due to the massive-growing technology.

From those three empirical studies, all of them has either directly or indirectly highlighted about the use of scientific evidences to facilitate the most optimal pronunciation improvement program. Some of them has solid theoretical foundation to establish new learning ecosystem that goes hand-in-hand with some aspects originated from cyberlearning setting to transform English language learning in ASEAN. Due to insufficient development attempt of 'essential material' that goes hand-in-hand with cyberlearning in transformative learning in ASEAN, this research attempts to reveal the design of cyberlearning focusing on pronunciation improvement with integration of prosodic-based materials and CEFR Framework intended for senior high school program. Therefore, during the developing program, the prior proficiency of English among the students must be drawn.

This research will follow the roadmap of topics should be rise within the designing and study of digital English learning resources. In prior connecting part, it should have cleared that the transition from Traditional Learning need to shift away into the Non-Traditional Learning that *"Embracing the Essentials, not The Basic"*. The relevant setting that will follow the transition is Cyber-Learning, that will transform not only the pedagogical foundation, but also the curriculum setting and educational policy in Indonesia. The transformative education would have resulted in new creation of knowledge that has taken into consideration on how to

leverage the emerging technologies to meet the relevance to how people learn. This is the most optimal way to improve the language learning context nowadays and arguably, addressing the disparity of English proficiency, particularly in ASEAN.

1.9 Frame of thought

Figure 1.8 Frame of Thought

Learning Crisis in Indonesia

- Traditional Learning
  - PISA — Rank #73 from 79 Countries
  - EPI — Rank #81 from 111 Countries
  - Memorization-Based Learning
  - Grammar-Based Learning
  - Verbal-Components-Based Materials
  - Passive Learners

- Non-Traditional Learning
  - Merdeka Curriculum
    - Technology X Pedagogy Integration
    - Working with Evidences
    - Shifting to Deep-Learning Paradigm
    - Intergenerational

- Transformative Learning
  - Policy
    - European Union
      - Life-Long Competencies
        - Literacy Competence
        - Multilingual Competence
        - Digital Competence
        - Personal, Social, and Learning-To-Learn Competence
        - Civic Competence
        - Cultural Awareness & Expression Competence
    - UNESCO — Digital Society
    - United Nations — Green Economy
    - OECD Learning Compass 2030
      - Embracing Students' Well-Being
      - Embracing Students' Agency
  - Curriculum
    - ASEAN Curriculum Guidance
      - ASEAN Curriculum Sourcebook
      - LEiA Guide
      - ASEAN Work Plan On Education 2021-2025
  - Pedagogy
    - Embracing The Essentials, Not The Basics
      - Non-Verbal Components
        - Melody
        - Music
        - Prosody
        - Intonation
        - Rhythm, Sonority, Stresses, and Pauses
      - Exploratory Learning
      - Story of Sciences — Reading For Emotions
      - Neuroscience of Learning
        - Emotion
        - Emphathy
        - Aesthetics
        - Meaning-Making Process
  - New Creation of Knowledge
    - Collaborative Learning
    - User-Generated Contents
    - Open Educational Resources
    - Data-Driven Learning
    - Simulation and Modelling
  - Cyber Learning
    - Embedding Scientific Insights
    - Leveraging Emerging Technologies
    - Designing Transformative Learning Activities
    - Engage Professionals
      - Teachers
      - Practitioners
    - Deeper Learning Outcomes
    - Continuous Improvement

- Reading for Emotions
  - Focus
  - Disturbance
  - Dialogue
  - Development
  - Resolution
  - Moral

- Digital English Learning Resources for English Pronunciation
  - Multi-Sensory Approach
  - Verbotonal Approach
  - Awareness-Raising Components
    - Enhanced Auditory Input- Verbotonalism
    - Humming and Various Forms of Repetition
    - Whole-Body Exercises and Relaxation – Synchrony
    - Manipulation of Spoken Language
    - In-Class Activities
    - Out-of-Class Activities
    - Autonomy
  - Sensitization of Prosody
    - Rhythm
    - Intonation

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Designing A 'Stream of English Sounds Book' with CEFR Framework Integration: A High School Pronunciation Study

1.10   Research method

The methodology of this research has committed to maintain the established aspect of scientific, technological, and innovative activities for pronunciation improvement study. Therefore, referring to the guidelines or references that is relevant for the context of the study while informing the methodology itself is a must.

1.11   Research design and steps of the research

This research leads by qualitative approach to guide every stage of research, including determining and validating the source and type of data, the data collecting techniques, research instrument, and data analyzing techniques. To suit the characteristic of issues taken into consideration; complex, dynamic, and perspective-broadening of English language learning, the qualitative research is relevant to use for its ability to cope with overlapping issues (Sugiyono, 2015). The characteristic of issues in this research is also calling for the extensive effort to reveal the deeper findings of the research. Therefore, the design of the upcoming pronunciation improvement study will be in Research and Development Framework (R&D) to not only designing the appropriate digital learning resource, but also to analyze and develop the learning product.

As mentioned in prior commitment of the research methodology, this research will try to be scientific, technological, and considerate for the innovative activities applied in the context of pronunciation improvement study. As one of OECD Countries, Indonesia has given the helpful and practical guide to collect R&D measurement, The Frascati Manual. The guideline is helpful for aligning the research and development program with the status quo amongst the members through the standardized efforts undergone for sufficing its five core criteria; novel, creative, uncertain,

systematic, and transferable (reproducible) (The Frascati Manual, 2015). Using this guideline as one of methodology reference will also contribute to the practice of science, technology and innovation concept addressing to a wide range of policy areas, including its newest concern, globalization.

The orientation of Research and Development that came this far calls for profound and meaningful attempt of conceiving new applications of knowledge. Aligned to the Frascati manual, it is suggested that this research takes the research and development process developed by Plomp, an elaboration of the EDR process model of Plomp in Erlyna (2022) is in the following:

1) Preliminary Phase or preliminary phase contains an analysis of needs and content for the development of a conceptual framework through literature review. Researcher uses the lesson plan to evaluate the current educational practice in accordance with transformative education framework. The analysis result will later become a reference to the need for the development of digital language learning resource as a companion for student learning.

2) Development or Prototyping Phase, is the development phase containing the design of design instructions, optimization of prototypes, as well as formative evaluation and revision. In respond to the preliminary phase result, researcher begins to design the learning resource. Establishing intellectual framework for digital English language learning resource, finding the suitable literature to be taken into learning resource, arranging the digital interface on a learning resource website, complement the interface by generated illustrations, appropriate instructions and meaningful extensions to support its utility were all deployed.

3) Assessment Phase or assessment phase in the form of summative evaluation to conclude whether the prototype developed meets the research objectives. The learning resource was validated by experts in two schemes; 1) Two experts in learning materials, media, and pedagogy were involved in phase of proposing the learning resource or before the implementation to the students, and 2) Two experts that actively teach in school were involved in phase of post-implementation interview to justify the utility of the learning resource.

1.12   Source and type of data

The source of data for this research is divided into two categories of qualitative data: Primary and Secondary data. These two data will be carried in descriptive way of elaboration The primary data originated from both teacher and students' response in the direct procedural phases of research; Survey, Interview, and Questionnaire. The survey is needed to capture the status quo of the educational practice implemented in the high school level. Meanwhile, the secondary data is taken from indirect resources; Podcast, Open-access Learning Resource, and literature. Considering the popularity of podcast as media to communicating knowledge indirectly, it is valuable to support the validity of data. The secondary data need to be evidence-based, therefore, the documented data from trustworthy organizations/institutions will be helpful to complement the database (Raihan, 2017). Both of them will profoundly construct the quality of this research contributing to the transformative education in Indonesia.

1.13   Data collection techniques and instruments

To collect the data responding to the research question, this research used observation, interview, and documentation technique. The observation will use the survey to collect natural information of

the research subject (Arifin, 2020). Survey is chosen due to the urge of collecting native and systematic information that the research ought to adjust (Wahyuningsih, 2013). The multi-resourced data will be contributed to verify the quality of the data collected (Yin in cited in Wahyuningsih, 2013). The open-ended interview needs to be established to obtain the informative experience of either students or teachers using the digital learning resources for the development of the research (Sinaga, 2020). Documentation is needed in since basic research phase since the researcher obliged to establish how either textual or audio-visual data in digital learning resource implemented. The questionnaire will help to generate the repository of the existing material implemented throughout the research (Comas-Quinn et. al, 2013).

1.14   Data analysis techniques

In qualitative research, the data analysis procedure is crucially important to arrange and interpret the data obtained. Generally speaking, qualitative data analysis needs to be elaborated in comprehensive way to become informative. To attain this output, some concerned stages of data analysis is imperative; Organize the collected data, synthesizing what is appearing in the result, arrange in certain pattern of data analysis, sorting the essentials in the repository, and concluding the findings (Sugiyono, 2015). Accordingly, researcher is encompassed to elaborate this data analysis orientation into two schemes:

Content analysis

In qualitative research, content analysis plays a crucial role by providing researchers with a systematic way to analyze and interpret textual data, such as interview transcripts, social media posts, or photographs, to gain deeper insights into the subject matter being studied.

Researchers use content analysis to identify patterns in recorded communication, make inferences about the producers and audience of the texts analyzed, and quantify the occurrence of specific words, phrases, subjects, or concepts in historical or contemporary texts (Erlingsson & Brysiewicz, 2017). Additionally, content analysis can be used to make qualitative inferences by analyzing the meaning and semantic relationships of words and concepts, providing researchers with a more nuanced understanding of the content being analyzed.

Overall, content analysis in qualitative research is a versatile and powerful method that allows researchers to delve deep into textual, visual, or audio content to uncover hidden meanings, patterns, and insights. It provides researchers with a structured approach to analyzing data, extracting valuable information, and contributing to a deeper understanding of the subject matter under investigation.

Thematic Analysis

How the elaboration of problems in qualitative research analysis needs to be organized concernedly. Otherwise, it will be lost in its holistic value of transformative education. Thematic analysis allows the researcher to systematically embrace the problems elaborated by organizing meaningful subsections (themes) into systematic identification, organization, and provision of interconnected insights inferred from the database (Azizah, 2023). The collection of interviews data and questionnaires were objects of this analysis. Thematic analysis approach for those contexts is valuable since the considerable simplification of data is feasible yet still meaningful and

essentially detailed (Peel, Karen L. (2020). This orientation of thematic analysis suggests six-stages of analysis to do; (1) collecting data; (2) engaging with data; (3) data coding; (4) implying the code categories; (5) the themes to conceptualize; and (6) to contextualise and represent the findings.

1.15 Research timeline

Table with specific target of each step in research completion and its completion time of the pronunciation improvement study is as in the following:

NO	Agenda	Year																2024							
		2023																Jan				Feb			
		Sept				Oct				Nov				Dec											
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1.	Preparation Stage																								
	a. Literature Study																								
	b. Observation																								
	c. Research Permission Administration (Pre) Research																								
	d. Writing Proposed Research Proposal					■	■	■	■	■															
	e. Proposing Research Proposal Title									■															
	f. Ratification of Research Proposal Title										■														
	g. Supervision	■	■	■	■	■	■	■	■	■	■	■	■	■											
2.	Research Stages																								
	a. Observation	■	■	■	■	■	■	■	■	■	■	■	■	■											

No	Activity																								
	b.Interview														■	■									
	c.Questionnaire																		■						
	d.Data Processing and Data Analyzing														■	■	■	■	■						
	e.Organizing Research Report															■	■	■	■	■	■	■			
3.	Examination Stages																								
	a. Research Proposal Seminar												■	■											
	b. Research Proposal Revision												■	■											
	c.Thesis Defense																							■	■
	d. Thesis Revision																							■	■

Table 1.1 Research Schedule - Table of Research Schedule