



The Perceived Impact of TRIPLE E-Based Training on English Pronunciation Learning and Teaching

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Abstract

Objective: This study investigates the perceived impact of TRIPLE E-based training on English pronunciation learning and teaching by examining the perspectives of Jordanian university lecturers and students.

Methods: Employing a mixed-methods approach, six university lecturers participated in interviews, and three engaged in focus group discussions to evaluate the efficacy of TRIPLE E training. Classroom observations (N=6 cases) tracked the integration of perceived benefits into pronunciation teaching practices. A questionnaire was administered to student participants (N=322), supplemented by six focus group discussions (N=6).

Results: The findings underscore the significant positive impacts of TRIPLE E workshops on pronunciation teaching, emphasising the transformative role of ICT tools and instructional strategies guided by rubrics. This transformation led to a shift in lecturers' roles towards facilitation, fostering interactive learning environments that transcended classroom boundaries. Students perceived tools such as YouGlish and Rose Medical as accurate and time-efficient, resulting in heightened engagement, motivation, and self-directed learning, enhancing pronunciation skills beyond conventional classroom settings.

Recommendations: In light of the findings, this study recommends integrating pronunciation apps and interactive learning tools to enable independent student practice, both inside and outside the classroom. It also suggests ongoing professional development for lecturers, such as TRIPLE E workshops, to equip them with TPACK knowledge and foster student-centered teaching. This approach encourages students to take ownership of their pronunciation learning through self-directed practice and immediate feedback.

Keywords: Pronunciation teaching; instructional Strategies; student engagement; innovative teaching

الأثر المدرك للتدريب المعتمد على نموذج ثلاثي الأبعاد (TRIPLE E) في تعلم وتعليم النطق باللغة الإنجليزية

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ملخص

الهدف: تهدف هذه الدراسة إلى استقصاء الأثر المدرك للتدريب المعتمد على نموذج "ثلاثي الأبعاد" (TRIPLE E) في تعلم وتعليم النطق باللغة الإنجليزية من خلال استعراض آراء المحاضرين والطلبة في الجامعات الأردنية .

المنهجية: استخدمت الدراسة منهجية مختلطة، حيث شارك ستة محاضرين جامعيين في مقابلات، فيما انضم ثلاثة آخرون إلى جلسات مجموعات تركيز لتقدير فعالية التدريب بنموذج "ثلاثي الأبعاد". كما تضمنت الدراسة ملاحظات صافية (N=6) حالات (لتتبع دمج الفوائد المدركة في ممارسات تعليم النطق. وتم توزيع استبيان على عينة من الطلبة المشاركين (N=322) إلى جانب إجراء ست جلسات نقاش ضمن مجموعات التركيز (N=6).

النتائج: أظهرت النتائج أن ورش العمل المستندة إلى نموذج "ثلاثي الأبعاد" أحدثت تأثيرات إيجابية كبيرة على تعليم النطق، حيث برز دور أدوات تكنولوجيا المعلومات والاتصالات واستراتيجيات التدريس المدعومة بمعايير ارشادية محددة في هذا التحول. وأسهم ذلك في انتقال دور المحاضرين نحو التيسير، مما عزز بنيات تعليمية تفاعلية تتجاوز حدود الصفوف التقليدية. كما لاحظ الطلبة أن أدوات مثل Rose Medical و YouGlish ترويدهم بمعرفة TPACK لتعزيز التدريس الموجه نحو الطالب. يشجع هذا النهج الطلاب على تحمل مسؤولية تعلم النطق خارج نطاق التعليم التقليدي .

الخلاصة: بناءً على النتائج، توصي هذه الدراسة بدمج تطبيقات النطق والأدوات التعليمية التفاعلية لتمكين الطلاب من ممارسة النطق بشكل مستقل، سواء داخل الفصل الدراسي أو خارجه. كما توصي بتوفير فرص تطوير مهارات المحاضرين، مثل ورش العمل لتعريفهم بمعرفة TPACK لتعزيز التدريس الموجه نحو الطالب. يشجع هذا النهج الطلاب على تحمل مسؤولية تعلم نظمهم من خلال الممارسة الذاتية والتغذية الراجعة الفورية.

الكلمات الدالة: تعليم النطق؛ استراتيجيات التدريس؛ تفاعل الطلبة؛ التعليم الابتكاري

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1. Introduction

There is a need to shift the focus from the tools used to the knowledge and skills taught or shared and the delivery methods (Kolb, 2017). Teaching has a long history and will continue to evolve alongside technological advancements. Laurillard (2002) stated that while technology has been present in educational settings for some time, it has significantly transformed the teaching landscape, particularly in higher education. She emphasised that to be effective, technology-based devices must be complemented by suitable pedagogical methods.

In essence, the effective use of technology in education hinges on integrating appropriate teaching approaches. Warschauer's emphasis on personal teaching philosophies, as described as early as 1996, has led to the exploration of new ways to use technology, not solely relying on the latest individual tools but rather adopting what Warschauer termed "personal pedagogies." Consequently, many teachers are incorporating technology into their lessons and designing activities with the goal of meeting objectives and enhancing student learning.

However, many of these efforts have failed to ensure successful and effective technology use. Frequently, language teachers evaluate the effectiveness of technology integration based on the amount of time the tool is used rather than considering how the tool can support learning objectives (Kolb, 2017). Moreover, as Bailey and Card (2009) indicated, many teachers commence their careers with minimal or no classroom experience. In light of this, they emphasised the necessity for university administrators to coordinate technological and pedagogical training. Additionally, Alghazo (2020) highlighted that a lack of knowledge of computer technology in pronunciation teaching and learning is one of the barriers to technology integration at the university level.

Indeed, effective teaching of English pronunciation involves a comprehensive consideration of multiple factors, including pedagogical strategies, materials, technology tools, methods of delivery, and learners' needs (Golonka et al., 2014). Pedagogical strategies encompass the broader approaches and philosophies guiding teaching, influencing how educators plan and deliver lessons such as communicative approach, error correction, minimal pairs, and contrastive analysis.

On the other hand, delivery methods are the specific techniques and tools used to convey instructional content and engage students, such as voice recording and tongue twisters. Language teachers must establish explicit learning objectives to integrate technology into the classroom successfully. They should then carefully select appropriate pedagogical strategies, which define their overall teaching approaches and technological tools that align with these objectives, thus enhancing the learning process (Kolb, 2020). This study focuses on the TRIPLE E framework to address the need for effective technology integration in pronunciation teaching and learning. It consists of three key components: engagement, enhancement, and extension. These components serve as a practical tool to guide teachers in prioritizing learning over technology. The TRIPLE E framework was chosen for this study because it focuses on how technology meets the needs of language learners, evaluates both lesson plans and technological tools, searches for effective learning strategies built into both, and allows for pedagogical strategies to work with technological tools rather than looking at technological tools in isolation.

By focusing on the learning goals and employing pedagogical strategies and tools that facilitate engagement, enhance understanding, and extend learning opportunities, teachers can create a learning-centred approach that maximises the benefits of technology (Kolb, 2020). Implementing this framework would be highly beneficial for university lecturers, ensuring that integrating ICT and pedagogical strategies centred on tools is firmly rooted in learning goals and effective learning practices. Thus, this framework can help university lecturers go beyond merely using technological tools and encourages them to consider how these learning tools can support and enhance the overall learning experience for students.

Moreover, it is essential to note that research on ICT tends to be concentrated in Western countries, and there is a pressing need to expand our understanding and dissemination of ICT studies in developing countries, including those in the Middle East and North Africa region, including Jordan (Abuhmaid, 2008; Bekele & Menchaca, 2010). Given the increasing political and economic pressure in Jordan to leverage ICT for educational progress (Adaileh & Alshawawreh, 2021), gaining a deeper understanding of the complexities surrounding ICT integration in higher education within these contexts becomes crucial.

Focusing on Jordan, this study aims to fill the gaps in the literature and provide valuable insights into effective ICT integration in pronunciation learning and teaching in an Arab Middle Eastern context. By conducting this study in Jordan, the findings are anticipated to contribute to expanding our understanding of ICT integration beyond Western contexts and promote the dissemination of research on effective technology integration in low-income countries.

Based on the researcher's personal experience of teaching general and medical English courses for over ten years, it is evident that learners often struggle with English pronunciation when speaking. This issue arises due to the lack of emphasis on pronunciation instruction in English language teaching classes, which tend to prioritise other language skills such as grammar, reading, and vocabulary (Alghazo, 2015). Specifically, pronunciation skills are frequently neglected in tertiary education, and limited attention is given to teacher professional learning to support university lecturers in teaching English pronunciation for medical purposes.

Compared to other language skills like reading, writing, vocabulary, listening, and grammar, pronunciation receives less focus and is often taught through traditional, book-based, and teacher-centred methods (Cuccharin et al., 2012).

Notably, the primary goal for most English Language Learners (ELLs) in the medical field is successful communication with other English speakers. However, the objective of pronunciation instruction should not be to make ELLs sound like native speakers but rather to enable them to master pronunciation, which facilitates effective communication (Scarella & Oxford, 1992).

Unfortunately, ELLs do not receive adequate instruction to address their pronunciation errors, which can have potentially dangerous consequences in the medical field and may subject students to ridicule from their peers. This issue stems from university lecturers' limited training in pronunciation pedagogy and familiarity with practical pronunciation teaching tools. This leads to a lack of confidence in teaching English pronunciation and addressing students' pronunciation errors (Bai & Yuan, 2019; Couper, 2017).

2. Review of Literature

2.1 Pronunciation as A Life and Death Matter in The Medical Field

Communication accuracy is paramount in the medical field, with errors having potentially disastrous consequences. Miscommunication, responsible for 80% of serious medical errors, occurs in patient-physician, physician-nurse, and inter-organizational interactions (Murphy & Dunn, 2010; Joint Commission, 2018). Proper speech production, especially in articulating medical terms and instructions, is vital, as poor pronunciation can lead to severe consequences (Cameron, 1998). Astonishingly, medical errors, including miscommunication, maybe the third leading cause of death in the USA (Makary & Daniel, 2016).

In Jordan, where English is widely used in clinical settings due to the diverse backgrounds of medical staff, proficiency is crucial for safe patient care (Alsubaiai, 2019). The socioeconomic landscape also demands English proficiency, adding complexity to teaching practices (Alsubaiai, 2019; Hamdan & Hatab, 2009). Globally, the use of English in healthcare is increasing, with a surge in demand for English proficiency among healthcare professionals worldwide (Molina & Kasper, 2019).

The need for English proficiency extends to international job markets, impacting the hiring of medical professionals in countries like Saudi Arabia, where 66.6% of doctors in public hospitals are expatriates (Alsubaiai, 2019). In Jordan, international organisations further intensify this demand, with professionals requiring English proficiency for higher salaries, opportunities in Gulf countries, and participation in international medical events (JMA President Hashem Abu Hassan, 2015). The quest for higher salaries motivates Jordanian doctors to seek opportunities abroad (Noghai, 2014).

In this context, proper and effective pronunciation instruction is crucial for medical students to succeed, ensuring their competence in English for medical communication, international collaboration, and professional growth.

2.2 Pronunciation Teaching and Learning Practices

Now, as we move forward, let's explore Pronunciation learning and teaching practices. This involves diverse methods and activities shaping educators' philosophy and classroom atmosphere. Effective pronunciation instruction enhances

learners' speaking skills and improves intelligibility, comprehensibility, and accuracy. Despite its crucial role, pronunciation teaching often faces neglect in ESL/EFL classrooms, leading to a lack of suitable materials and methodologies.

This neglect is evident in metaphors like "the Cinderella syndrome," highlighting pronunciation's status as the "orphan" or "the poor relation" of language education. The challenges include a lack of clear guidelines, suitable materials, and systematic approaches for pronunciation instruction. Teachers often grapple with conflicting purposes and practices, choosing between segmental and suprasegmental aspects.

Teachers' reluctance to teach pronunciation is influenced by a lack of confidence, an absence of systematic approaches, and uncertainty about what and how to teach. The literature recognises pronunciation as one of the most challenging areas for ESL/EFL instructors. Despite calls for specialised training in pronunciation pedagogy, few studies have explored its impact on teachers' knowledge and practices.

Despite various studies' reported improvements, pronunciation instruction continues to be undervalued in language programs and teacher training. Experts advocate for specialised training within teacher preparation programs to address deficiencies in pronunciation instruction. University lecturers in Jordanian universities must receive such training to ensure effective English pronunciation teaching inside and outside the classroom.

2.3 The Need for Teacher Training in Pronunciation

As we focus on the practical application of teacher training, I will discuss the importance of teacher training in pronunciation. It is crucial for EFL and ESL educators, given the growing interest in L2 pronunciation (Alghazo, 2020). Successful training is vital in teaching, fostering confidence and practical implementation for skilled, educated, and culturally aware future generations (Couper, 2017; Huensch, 2019). Research emphasises the connection between teachers' use of pronunciation techniques and their training in pronunciation pedagogy, underlining the demand for more such training (Baker, 2014; Baker & Burri, 2016).

Teacher professional development involves a complex learning process and transforming knowledge into practice (Avalos, 2011). Teacher education programs face challenges, necessitating innovative solutions to prepare EFL/ESL teachers as active mediators and knowledge constructors (Hüttner et al., 2011; Bayyurt & Sifakis, 2017). Workshops effectively enhance teachers' knowledge and classroom practices, influencing their beliefs and content knowledge (Borg & Al-Busaidi, 2012; Ekanayake & Wishart, 2015; Borg, 2011). However, in second or foreign language pronunciation pedagogy, insufficient professional training leads to a lack of emphasis on pronunciation teaching (Foote et al., 2011; Macdonald, 2002).

Despite the recognised importance of pronunciation teaching, teacher education in this field remains under-researched (Baker, 2014). Scholars emphasise professional learning opportunities for ESL/EFL instructors in pronunciation teaching (Brinton, 2018; Derwing & Munro, 2015). Limited research exists on how teachers effectively apply their professional learning related to pronunciation pedagogy in actual classroom practices (Cohen & Fass, 2001).

While some studies explore teachers' thoughts on pronunciation instruction, few delve into the process of applying professional learning in the classroom (Baker, 2014). Notably, even a single course in pronunciation pedagogy can significantly impact teachers' knowledge and confidence (Baker, 2011). However, there is a shortage of such courses in teacher training programs, prompting calls for increased teacher training to enhance pronunciation instruction (Celce-Murcia et al., 2010; Derwing & Munro, 2015; Murphy, 2014).

The extent to which L2 teachers apply acquired knowledge and skills in pronunciation teacher preparation settings remains unknown (Burri & Baker, 2020). Exploring this topic is crucial, as it can shed light on the impact of teacher training on teaching practices. The following section will discuss the rationale for using the TRIPLE E framework.

2.4 Rationale for the TRIPLE E Framework

Educators acknowledge the potential of technology to support learning objectives (Becker, 2000). However, studies indicate a lack of educators' skills and frameworks for assessing technology's impact on learning outcomes (Ertmer, 1999; Swanson, 2006). While technology integration doesn't consistently align with students' learning goals (Kleiman, 2000; McKenzie, 2003), addressing the complexity of education and classroom dynamics is crucial.

The TRIPLE E framework emphasizes the need for technology to meet language learners' needs, evaluating lesson plans, tools, and learning strategies. It guides university lecturers in making pedagogical decisions while incorporating technology effectively into their teaching practices.

Based on Kolb (2017), the TRIPLE E framework prioritizes active engagement, quality use, and aligning technology with learning goals. It discourages drill and practice methods and promotes authentic problem-solving and creative activities. Value-added strategies, such as self-reflection and authentic contexts, are encouraged for positive outcomes. The TRIPLE E framework aims to overcome challenges associated with previous models like SAMR, TIM, TAM, and TPACK. By focusing on learning goals before technology tools, this approach simplifies educators' tool selection and ensures positive effects on student achievement.

However, technology integration faces challenges in English language teaching, particularly in developing countries like Jordan. Barriers include information overload, inadequate teacher ICT training, and unfriendly classroom technology environments. Overcoming these obstacles requires adapting attitudes, training, and addressing institutional inertia.

In conclusion, the TRIPLE E framework provides a practical tool for effective technology integration, considering learning goals and overcoming challenges. Addressing barriers in English language teaching necessitates a shift in attitudes, training, and infrastructure improvements. Therefore, this study investigates the impact of TRIPLE E workshops on enhancing university lecturers' and students' teaching and learning practices. The research emphasizes the critical role of accurate pronunciation in the medical field and highlights the need for comprehensive coaching in pronunciation, including technology integration, for university lecturers in Jordan see the Framework below.

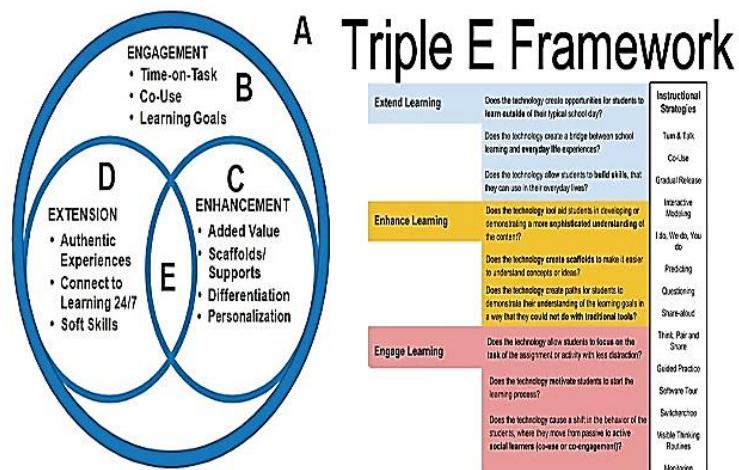


Figure 1: The TRIPLE E Framework by Kolb (2017)

3. The research Methodology

This study addresses this question: What are the perceived impacts of the TRIPLE E workshop for university lecturers and students when teaching and learning English pronunciation? The investigation delves into the effects and changes resulting from TRIPLE E training-based workshops on university lecturers and students in the context of teaching and learning English **3.1 Data Collection**

The study utilised a triangulation of instruments and different participants' views to capture a comprehensive understanding, incorporating semi-structured interviews, focus group discussions, classroom observations, and a questionnaire. The results are presented in two sections:

a. Lecturers' and Students' Benefits (Perceived by University Lecturers)

The benefits of the TRIPLE E workshop were elicited through semi-structured interviews with university lecturers (N=6 cases). Subsequent classroom observations were conducted to investigate how these benefits were incorporated into their

pronunciation teaching practices. This aimed to highlight potential impacts on participants' practices, emphasising changes in adopting new pronunciation apps, learning tools, and instructional strategies in their classroom settings.

Following classroom observations, focus group discussions were held with one group (N=3 lecturers) due to scheduling constraints for the other three participants.

b. University Students' Perceptions (Integrated into Courses by Attending Lecturers)

The second section explores university students' perceptions of the perceived impacts of TRIPLE E training-based workshops integrated into their courses by the lecturers who attended them. Notably, only the lecturers attended these workshops, not the students.

Two instruments were employed for data collection: a questionnaire (N=322) and focus group discussions with six groups (N=4 students in each group).

The investigation primarily focused on integrating new technological tools such as YouGlish, Rose Medical, Elsa, and Vocaroo and instructional strategies such as share aloud, I do, we do, you do, with a specific emphasis on their pronunciation learning.

3.2 Data Analysis

The data from diverse instruments and participants underwent a rigorous analysis to unveil the perceived impacts of the TRIPLE E workshop on university lecturers and students in English pronunciation teaching and learning.

3.2.1 Lecturers' and Students' Benefits

1. Interviews: Thematic analysis of semi-structured interviews (N=6) identified key benefits perceived by lecturers.

2. Observations: Qualitative analysis of classroom observations (N=6) investigated the integration of identified benefits into pronunciation teaching practices.

3. Focus Groups: Thematic analysis of focus group discussions (N=3) enriched the understanding of lecturers' perspectives.

3.2.2 University Students' Perceptions

1. Questionnaire: A quantitative analysis of questionnaire responses (N=322) provided an overview of students' perceptions of integrated tools and strategies.

2. Focus Groups: Thematic analysis of focus group discussions (six groups, N=4 each) explored qualitative aspects of students' experiences.

4. Results

4.1 Overview of Impacts of TRIPLE E Workshops on Pronunciation Teaching and Learning

The analysis of interviews and focus group discussions revealed six key impacts arising from the TRIPLE E workshop attended by university lecturers. These impacts were intertwined with the personal evolution of the lecturers, subsequently influencing their students. These impacts are as follows:

Impact 1: Enhancing Pronunciation Teaching Practice through Integration of ICT Tools and Instructional Strategies

Thematic analysis identified that university lecturers successfully integrated new technological tools and instructional strategies into their pronunciation teaching following the TRIPLE E workshops. Incorporating tools such as YouGlish, Rose Medical, ELSA, Quizziz, and online dictionaries resulted in a more dynamic and engaging learning experience for students. Lecturers emphasized the effectiveness of these tools in providing additional resources, interactive activities, and opportunities for students to practice and refine their pronunciation skills. The consensus among lecturers was that the TRIPLE E workshops provided valuable knowledge and skills applicable in the classroom to support pronunciation teaching practices and enhance pronunciation learning outcomes.

Impact 2: Rubrics Impact Pronunciation Teaching Practices and Students' Learning

The TRIPLE E evaluation rubrics significantly assisted university lecturers in assessing and selecting effective pronunciation apps and learning tools. Lecturers perceived the rubrics as valuable tools for self-reflection, helping them

make informed decisions about which tools to use in their classrooms. This led to a more effective and efficient teaching approach, positively impacting students' pronunciation learning performance. Integrating rubrics into syllabi reflected lecturers' awareness of the importance of evaluation criteria aligned with learning objectives.

Impact 3: Changing Lecturers' Roles

After attending the TRIPLE E workshops, university lecturers experienced a shift in their roles from traditional knowledge transmitters to facilitators of pronunciation teaching. This shift allowed for more student-centred and interactive learning environments focused on individual student needs. Lecturers emphasized their commitment to creating meaningful learning experiences and supporting students' pronunciation practices inside and outside the classrooms. The new approach promoted student engagement, motivation, and active participation in the learning process.

Impact 4: Ongoing Pronunciation Learning Beyond the Classroom Borders

New pronunciation apps and learning tools were perceived as efficient in extending students' pronunciation learning beyond traditional classroom boundaries. This flexibility provided students with authentic learning experiences, resulting in better long-term and sustainable learning outcomes. Lecturers highlighted the importance of students continuing their pronunciation learning outside the classroom, fostering a culture of ongoing learning and self-empowerment.

Impact 5: Using Authentic Pronunciation Tools

University lecturers reported integrating authentic tools such as YouGlish, Rose Medical, and ELSA positively impacted students' pronunciation learning experiences. These tools allowed students to practice pronunciation skills in natural contexts, deepening their understanding of medical and scientific terms. Using authentic tools was seen as a valuable pedagogical decision, offering a more engaging and interactive learning environment without distractions.

Impact 6: Improving Students' Confidence and Attitude towards Pronunciation Tools

Integrating new pronunciation apps and learning tools positively influenced students' confidence, motivation, and attitudes toward pronunciation learning. Students became more willing to practice, seek feedback, and overcome the fear of making mistakes. The TRIPLE E workshops enhanced students' motivation and attitudes toward learning pronunciation, ultimately contributing to positive learning outcomes.

In summary, participation in the TRIPLE E workshops led to a noticeable change in university lecturers' pronunciation teaching approach. These workshops successfully enhanced students' motivation and attitudes toward learning pronunciation. Consequently, integrating effective pronunciation apps and learning tools positively impacted student engagement and learning outcomes.

4.2 Evidence from classroom observations

The lecturers reported personal implications from the TRIPLE E workshops, including enhanced teaching practices influenced by incorporating pronunciation apps, learning tools, and instructional strategies. Noteworthy benefits extended to students, encompassing the broadening of pronunciation learning beyond classroom borders and using authentic tools. These insights were corroborated by observations during classroom sessions.

UL1 showcased exemplary expertise in creating an optimal learning environment. Using tools like YouGlish, Rose Medical Pronunciation Coach, and ELSA, UL1 emphasized segmental and suprasegmental features. Incorporating Vocaroo further highlighted a dedication to innovative instructional methods, providing students with increased opportunities to practice and enhance their pronunciation skills.

UL2 effectively integrates various tools, including YouGlish, Rose Medical, Vocaroo, Quizziz, and Oxford and Cambridge dictionaries. By employing a high level of praise and software tours, UL2 facilitated students' navigation and utilization of these pronunciation apps and learning tools. This approach created a positive atmosphere, contributing to an affirmative learning environment.

UL3, through a "software tour" strategy, guided students in mastering individual vowel and consonant sounds, word stress, and syllables using tools like YouGlish and Vocaroo. This comprehensive approach ensured a holistic development of pronunciation skills, emphasizing segmental and suprasegmental features.

A notable outcome of the observations was the transformation of lecturers' roles. UL1 became a supportive agent,

actively motivating and monitoring students' progress, fostering independence and autonomy. UL4 adopted a student-centred approach, engaging students in diverse tasks encompassing segmental and suprasegmental pronunciation features. This shift from traditional knowledge providers to facilitators created a more interactive and engaging learning environment.

The potential impact of these practices extended beyond the classroom. Lecturers assigned pronunciation-focused activities through e-learning platforms, prompting students to record pronunciations focusing on segmental and suprasegmental features. Sharing these recordings facilitated personalized feedback, encouraging active engagement in independent practice and responsibility for pronunciation learning.

4.3 Impact of the TRIPLE E Training-Based Workshops as Perceived by University Students

This section presents an investigation into the potential perceived impact of the TRIPLE E training-based workshops on university students, which were attended by their lecturers, employing a comprehensive research approach that incorporates both questionnaires and focus group discussions. The questionnaires were utilised to assess the effectiveness of the newly implemented pronunciation apps and learning tools introduced by university lecturers. Concurrently, the focus group discussions provided an opportunity for a thorough exploration of students' personal experiences and perspectives on utilising these pronunciation apps and learning tools. Through this meticulous methodology, valuable insights were obtained, revealing the impact of the TRIPLE E workshops on enhancing students' pronunciation learning.

The TRIPLE E Impact as Perceived by University Students

Following the administration of questionnaires to university students, a focus group discussion involving six groups of students was conducted, with each group comprising four students from diverse classes and academic levels. This data collection method aimed to complement the findings from the students' questionnaires and gain a deeper understanding of university students' perceptions regarding the utilisation of new technological tools by university lecturers to improve their pronunciation learning and the advantages they offer. The group discussion approach facilitated the emergence of various viewpoints, opinions, contributions, agreements, and disagreements that would not have been observable through one-on-one interviews.

Impact 1: Better Engagement with Pronunciation Learning Materials

The study's interviewees identified the impact of using accurate and authentic tools that enhanced their engagement (time on task) following the TRIPLE E workshops their lecturers attended. The participants expressed a range of perspectives; for example, US1 highlighted in FG 2 the efficacy and efficiency of YouGlish as a pronunciation learning tool compared to other tools like YouTube. Specifically, YouGlish's ability to explore different accents and display only one video at a time without any distractions or interference was emphasised, suggesting that this feature enhanced their ability to focus on and learn from the given videos with more time on tasks, which made a big difference in their pronunciation performance.

Similarly, US2 and US3 in FG 2 and 5 emphasised the benefit of using the new practical tools that improved and enhanced their ability to listen to and pronounce medical words accurately and provided an authentic learning experience. They also found the new ICT tools efficient and effective in their pronunciation learning process. Below are some of the responses:

"Yes, the tools that we used this semester provided us the chance to listen and pronounce the medical words accurately. It was a great way to improve our listening skills." (US2, FG 5)

"YouGlish and other tools we used this semester helped us learn how to pronounce medical words and use English in context quickly and accurately. The use of these tools did not waste our time. They are great tools with more time to focus on pronunciation." (US2, FG 2)

"YouGlish is the best tool we used; it is more accurate and authentic" (US3, FG 3).

US4 highlighted in FG4 the importance of using the new tools to improve the pronunciation of medication names. She stated that the pronunciation tools used during the semester were effective in helping them correctly pronounce these words with a focus on individual sounds and stress, which is crucial for effective communication in the medical field. The new

tools helped us spend less time searching for medical words and more time practising. She said:

"Yes, specifically, the use of the new pronunciation tools that we used this semester helped us pronounce the names of the medication correctly. They are accurate and reliable tools with more efficient use of time on tasks. " (US4, FG 4).

Similar to the above responses, US3 asserted the usefulness of using accurate and efficient tools such as YouGlish and Rose Medical. She emphasized that these tools provided a reliable reference for checking the pronunciation and meaning of new words, which is valuable for language learners. US3 and US4 in focus group 4 asserted the effectiveness of using Rose Medical as an accurate tool for medical terms. They perceived themselves as more confident using this tool since it is an efficient tool that provides accurate pronunciation and immediate feedback and is tied to the medical industry.

The responses above show that university students found the pronunciation tools provided by their lecturers to be accurate, authentic, and time-efficient. These tools improved medical terms and English pronunciation in contexts that provide immediate feedback. Using these tools made students feel more engaged and confident in communicating effectively in the medical field. Overall, using these tools was a valuable and effective way to support pronunciation learning and enhance communication skills.

Impact 2: Self-Directed Pronunciation Learning Outside the Borders of The Classroom

A key finding from the focus group discussion was the potential for self-directed pronunciation learning outside the classroom. Many students believed that using new pronunciation-effective tools, such as YouGlish and Rose Medical, outside of the classroom allowed them to take ownership of their own learning and improve their pronunciation skills at their own pace. This was a significant benefit, as it allowed them to work on their pronunciation in their own time and in a way that suited their learning needs. Overall, the focus group discussion highlighted the importance of providing students with the tools and resources to take control of their learning and develop their pronunciation skills beyond the confines of the traditional classroom setting. For example, US1 in FG 5 further emphasised the convenience of working from home using these pronunciation tools. She highlighted the fact that the new tools have helped her to pronounce medical terms since they are easy to access outside of the classroom setting and said:

"I loved being able to use YouGlish and Rose Medical on my own time. It is so convenient and allows me to practice my pronunciation skills whenever and wherever I want. I feel like I am really taking ownership of my own pronunciation learning in the medical field" (US1, FG 5).

US1 in FGs 3 & 5 pointed out that the new pronunciation tools have increased their pronunciation learning by allowing them to watch, listen, and record their pronunciation while having access to the written words outside the borders of the classroom and said:

"Yes, absolutely, we can use the new tools such as YouGlish and Rose Medical that our teachers gave us this semester from the comfort of our homes. We can watch, listen, repeat, and record our pronunciation; every word is written under the video" (US1, FG 3)

"Yes, the tools have helped us to pronounce medical terms outside the classroom and at home. They allowed us to watch other apps to listen and check the manner of pronunciation, and these things had not existed before" (US1, FG 5).

Similar to the above responses, US1 and US2 highlighted in FG 4 the benefits of using pronunciation tools for learning medical terminology outside of the traditional classroom setting. She emphasised that these tools provided an opportunity to listen to native speakers, practice pronunciation in a more relaxed environment, and receive immediate feedback on their accent. This helped them feel more confident in their ability to communicate effectively in the medical field and enhance their overall pronunciation skills.

To sum up, it was revealed that integrating new effective tools in pronunciation learning allowed for self-directed learning outside the classroom. This learning empowered students to take control of their learning and practice at their own pace, which ultimately improved their confidence in pronunciation in the medical context. Students found that using these tools outside of the classroom provided a more relaxed learning environment, which led to an increase in motivation and engagement in their pronunciation practice.

Impact of TRIPLE E Workshops on University Students' Perception

This section investigates the perceived impact of TRIPLE E training-based workshops on university students, whose lecturers attended the sessions. Employing questionnaires and focus group discussions, the research gauged students' experiences with newly implemented pronunciation apps and learning tools, providing valuable insights into the workshops' influence on pronunciation learning.

Impact 1: Better Engagement with Pronunciation Learning Materials

Questionnaires and focus group discussions revealed students' recognition of the efficacy and efficiency of new tools, particularly YouGlish and Rose Medical. Students appreciated the accuracy and authenticity of these tools, enhancing their engagement and focus on pronunciation tasks. The tools were deemed time-efficient, allowing more effective pronunciation practice.

Impact 2: Self-Directed Pronunciation Learning Outside the Classroom

A significant finding was the potential for self-directed learning beyond classroom boundaries. Students, particularly in focus group discussions, expressed the belief that tools like YouGlish and Rose Medical allowed them to take ownership of their learning. The convenience of accessing these tools outside the classroom setting empowered students to practice pronunciation at their own pace, fostering a sense of control and increased motivation.

5. Discussions

Reviewing existing literature yielded no prior research on the perceived impact of TRIPLE E training-based workshops for university lecturers and students in teaching and learning English pronunciation. This research study is the original examination of the influence of TRIPLE E workshops on pronunciation teaching and learning practices. Data was collected from interviews, focus group discussions, classroom observations with lecturers, as well as questionnaires and focus group discussions with students. This diverse data collection approach provided a comprehensive understanding of the perceived impact of TRIPLE E training-based workshops.

As discussed previously, this investigation focused on assessing the outcomes of TRIPLE E workshops for university lecturers and students. Interviews and discussions with university lecturers revealed their positive feedback regarding the TRIPLE E workshop. They noted that it created a supportive learning community, boosting their confidence and effectiveness in using effective pronunciation apps, learning tools, and instructional strategies. This transformed their ability to present pronunciation materials effectively, fostering an authentic learning environment that was not typically found in traditional teaching methods.

The analysis of these interviews, focus group discussions, and classroom observations revealed several expected impacts on university lecturers. These included improvements in pronunciation teaching practices, changes in lecturers' roles, and the beneficial effects of TRIPLE E evaluation rubrics on pronunciation teaching and student learning. The TRIPLE E evaluation rubrics played a crucial role, equipping lecturers with valuable resources to make well-informed decisions regarding the implementation of pronunciation apps and learning tools. This alignment with pronunciation teaching objectives increased engagement and extended learning beyond the traditional classroom setting.

Additionally, it is noteworthy that the perceived influence of the TRIPLE E training workshops on university lecturers and students extended beyond the confines of the classroom, nurturing self-directed pronunciation learning. This motivation encouraged students to practice pronunciation through authentic tools and resources beyond class, thus boosting their confidence and attitudes towards the new pronunciation apps and learning tools.

The affirmative impact of integrating pronunciation apps and learning tools aligns with prior research advocating for computer-assisted pronunciation training (CAPT) as superior to traditional pronunciation instruction (Al-Qudah, 2012; Baradaran & Davvari, 2010; Elimat & AbuSeileek, 2014; Seferoglu, 2005; Tai, 2013). For instance, in a study by Elimat & AbuSeileek (2014), the efficacy of ASR-based software, such as "Tell Me More English" by Rosetta Stone, in CAPT classrooms was compared to traditional pronunciation instruction. The research revealed substantial differences in favor of the experimental groups employing ASR-based CAPT, underscoring the effectiveness of individual practice within CAPT instruction.

Seferoglu (2005) and Neri et al. (2003) demonstrated the effectiveness of computer-based pronunciation tools in enhancing pronunciation instruction. Seferoglu's study found that Pronunciation Power outperformed traditional instruction by focusing on sounds, using animated visuals, and sound-focused exercises. Teachers adopted this program to enhance new sound introduction. Neri et al. (2003) found computer technology's benefits in providing unlimited, realistic second language input, automated feedback, and the use of pre-recorded materials for pronunciation improvement. University lecturers favored tools with simulated target language voices over traditional methods, motivating them to enhance pronunciation instruction, making it more enjoyable for students.

In the Iranian context, Pourhosein Gilakjani (2018) found that computer technology enhanced teachers' interest due to its interactive and enjoyable environment, improving pronunciation acquisition, and instructional quality. It boosted teacher confidence and student motivation, transforming teaching practices. In Jordan, Alghazo (2020) noted that integrating computer technology in higher education language instruction could boost student confidence and motivation in speaking English. University lecturers adopted student-centered approaches and technology for pronunciation mastery.

Additionally, it is important to note that university students benefited from TRIPLE E workshops, gaining authentic learning experiences. They used the YouGlish website for shadowing, imitating sounds and intonation. This aligns with previous studies (Derwing & Munro, 2015; Goodwin, 2008) emphasizing the significance of shadowing and repeated imitation of one-minute videos to improve pronunciation.

Syunina et al. (2017) found that students improved their speaking skills by using authentic video materials like YouGlish (Kozhevnikova, 2014). Other researchers (e.g., Roschelle et al., 2000; Kolb, 2017) noted ICT's role in supporting higher-order thinking and problem-solving. Ramsden (1992) emphasized deep learning through authentic contexts, as did Lave & Wenger (1991) in real-world professional experiences. Boud & Solomon (2001) highlighted effective apprenticeships in medical science and education. Taken together, these studies confirm the significant role that ICT plays in enabling the creation of authentic tasks and contexts, connecting students with outside experts, and fostering collaboration across geographic distances (Herrington et al., 2010).

Furthermore, university students benefited from pronunciation apps and learning tools beyond the classroom due to their lecturers' TRIPLE E workshop involvement. This aligns with prior studies (e.g., Anderson, 2012; Duarte, 2013; Liu & Hung, 2016; Kember & McNaught, 2007; Wright & Reju, 2012) supporting autonomous learning. For example, Liu and Hung (2016) demonstrated MyET's effectiveness in sentence-level pronunciation practice, significantly improving students' pronunciation skills and active involvement in learning.

Furthermore, several authors have explored the constructivist approach's impact on academic performance in tertiary education (e.g., Essack et al., 2016; Galbraith et al., 2012; Weimer, 2010). They advocate for student-centered, interactive learning, promoting learner autonomy and engagement for better educational outcomes. These findings, along with prior research, underscore the value of incorporating autonomous learning and constructivist approaches in tertiary education.

Another perceived impact is that the TRIPLE E workshop transformed lecturers' roles into facilitators or coaches of learning, guiding students in pronunciation tools and providing feedback instead of traditional lectures (Pourhosein Gilakjani & Rahimy, 2020). This shift aligns with the impact of technology integration reported in the literature (e.g., Baradaran & Davvari, 2010; Chien et al., 2012; Dalal et al., 2017; Levin & Schrum, 2012; McKnight et al., 2016; Peled et al., 2015; Pourhosein Gilakjani & Sabouri, 2014; Riasati et al., 2012). Chapman (1997) added that computer technology shifts from teacher-centred lectures to student-centred strategies, where students seek information, analyze data, and draw their conclusions.

Chien et al. (2012) and McKnight et al. (2016) highlighted that integrating technology shifted teachers' roles from knowledge transmitters to learning facilitators or coaches. This aligns with the constructivist approach, as observed in the TRIPLE E workshop, where university students construct their pronunciation knowledge. Alrumaih (2004) studied the integration of technology in Saudi Arabian pronunciation teaching. The findings revealed that participating teachers' positive attitudes influenced their motivation to use technology, resulting in changes to their teaching methods and roles

and their students' roles.

These studies collectively support the effectiveness of a student-centred approach in enhancing university students' pronunciation performance, enabling them to learn beyond the classroom (Kolb, 2020). Alghazo (2021) further emphasized that students' use of pronunciation learning strategies outside the classroom enhances autonomy and self-directed learning. A seminal paper (Acton, 1984, as cited in Alghazo, 2021) argued that "the most important learning and change must go on outside of the class, not inside" (p. 73).

Overall, university lecturers favored modern teaching methods, aligning with recent studies (Hermans et al., 2017; Nguyen et al., 2021) showing that lecturers are motivated to change their practices after using computer-assisted teaching tools for English pronunciation (Niess, 2011). However, Alghazo's study in Jordan found limited technology use by lecturers and students, resulting in a disconnect between digital natives and digital immigrants (Prensky, 2001).

In summary, university lecturers effectively applied TRIPLE E benefits to their pronunciation teaching. To enhance lecturers' technology integration, TPACK development is recommended (Guzey & Roehrig, 2009). This would bridge the gap identified by Alghazo (2021) and align with Tai's emphasis on classroom observation as a data source in CALL teacher education courses (Tai, 2013). These findings can serve as a model for further research and training to enhance computer technology use in teaching and learning (Alghazo, 2020).

6. Implications and Conclusions

In this research study, I have presented my findings and situated them in light of relevant international and Jordanian literature. The second aim of this study was to investigate the impact of the TRIPLE E workshops from different perspectives (university lecturers and students). Returning to the question posed at the beginning of this study, it is now possible to state that the results of the interviews, focus group discussions, questionnaire, and classroom observation indicated a positive impact of the TRIPLE E workshops on lecturers' TPACK knowledge and pronunciation teaching and learning practices in and outside the classroom setting.

The TRIPLE E PD training workshop was designed to have a transformative effect on lecturers' pronunciation teaching practices, with a focus on shifting from a controlling role of the curriculum to a facilitator role because the new pronunciation tools, learning tools, and instructional strategies provided opportunities for university lecturers to change their classes into student-centred classes. This involves empowering students to take control of their pronunciation learning, promoting active engagement, and providing immediate feedback on their pronunciation. This reinforced what they had learned in class and promoted independent learning. It also enhanced students' behaviours from passive learners who depended solely on their teachers, to active learners who were able to independently learn and practice their pronunciation skills. For example, the use of an online video pronunciation dictionary and YouGlish helped learners progress in their segmental and suprasegmental performance and made them more active and self-directed learners inside and outside the borders of the classroom setting, allowing them to work more independently and not depend too much on their lecturers. This provided an opportunity for lecturers to move from the role of dispensers of knowledge to facilitators and permitted them to motivate their students to become active learners.

Moreover, university lecturers were observed to demonstrate TPACK knowledge in their actual pronunciation teaching, which indicated that the TRIPLE E PD workshops served the purpose of preparing them to transform the knowledge learned into actions. By combining quantitative and qualitative data from university students and professors, it was clear how the participants' TPACK developed. They also seemed to be in line with the workshop's goals, which were that technology should be thought about and used in ways that cover the TRIPLE E framework (engagement, enhancement, and extension).

This involved using pronunciation apps, learning tools, and instructional strategies that supported the teaching of phonological features such as phonemes and stress patterns and created a supportive and interactive learning environment for university students to practice and develop their pronunciation skills. Students were empowered to take control of their own learning, leading to increased engagement in their pronunciation practice. These tools provide audio and visual examples of how words and phrases are pronounced by providing authentic exposure to the target language in real-world contexts.

Further to this, a range of interactive exercises, including word stress and intonation patterns, shadowing exercises, and personalised feedback, enabled students to record their own voice and compare it to the correct pronunciation, enabling them to identify and correct their pronunciation errors. Overall, the implementation of TRIPLE E workshops proved to be effective in enhancing both pronunciation teaching and learning practices. Promoting a student-centered approach and providing effective pronunciation apps and learning tools allowed students to achieve more accurate and natural-sounding speech in the medical field. Further to this, enhancing ongoing pronunciation learning outside the confines of the classroom setting with better engagement with the tools.

The outcomes of this study have optimistically provided a starting point for making changes not only at Jordanian universities but also in the Middle East and across the global academic community. This study highlights the importance of effective pronunciation tools and instructional strategies in pronunciation teaching in the medical field. The implications and recommendations from this research can be valuable to institutions worldwide. By embracing these findings, universities worldwide can enhance their pronunciation instruction in medical education and other contexts, thereby benefiting students and professionals in these fields globally.

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