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Breaking Barriers: Gender, Experience, and Technology in Implementing Universal Design for Learning in Moroccan EFL Classrooms

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Abstract
This study examines how demographic and contextual features shape Universal Design for Learning adoption in Moroccan EFL classrooms, using quantitative methods. Its significance stems from persistent obstacles to Universal Design for Learning integration in the Moroccan context, especially amid top-down reforms aimed at broadening English instruction and updating curricula at the secondary level. By spotlighting the real-world implications of such initiatives, this inquiry raises the question: How do demographic profiles and resource availability affect Universal Design for Learning enactment, and to what extent do current reforms align with classroom realities? The analysis revealed that female teachers reported more barriers to Universal Design for Learning implementation than their male counterparts ($t(106) = -2.254$, $p = .026$). Digital materials exerted a beneficial effect on all Universal Design for Learning domains, with significant findings for engagement ($t(106) = 2.246$, $p = .027$), representation ($t(106) = 2.402$, $p = .018$), and action and expression ($t(106) = 3.005$, $p = .003$). Furthermore, regression analysis showed that age significantly predicted engagement ($R^2 = .064$, $p = .008$) and representation ($R^2 = .049$, $p = .022$). These patterns underscore the need for stronger technological infrastructure and more targeted support for female educators, thereby strengthening inclusive learning experiences.

Keywords: EFL classrooms, gender differences, inclusive education, Moroccan education, statistical analysis, universal design for learning implementation

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Introduction

Recent years have witnessed substantial transformations in educational policy, as global organisations such as UNESCO (2017) have underscored the imperative for inclusive and sustainable teaching practices. Changes in instructional paradigms have attracted significant scholarly attention from academics (Ainscow, 2020; Bracken, 2019; Dalton, 2019; Dalton & Brand, 2012; Gronseth & Dalton, 2020; Tai et al., 2021). These studies document a move away from conventional methods towards approaches that are more responsive to the varied needs of today's learners. In Morocco, the educational system is currently undergoing reforms intended to expand English language instruction at the secondary level and to update the curriculum to support a more inclusive environment. Such systemic changes have stimulated further academic inquiry into their practical efficacy in real classroom settings.

Within this context, the present study examines the implementation of Universal Design for Learning (UDL) in Moroccan English Foreign Language (EFL) classrooms. The significance of this research lies in its focus on discerning the factors that either impede or facilitate the application of UDL principles in an environment steeped in longstanding pedagogical traditions, mainly a competency-based mindset and pedagogical doctrine (Cheney, 2023; Moumen, 2022; Tai et al., 2021). The study is motivated by the need to better understand whether the shift from a competency-based approach to a UDL framework leads to enhanced teaching practices and improved learning outcomes (Amrous et al., 2020; Ben Haman, 2021; Boutieri, 2016; R'boul, 2022). In light of these considerations, the investigation is guided by the research question: How do demographic profiles and resource availability affect Universal Design for Learning enactment, and to what extent do current reforms align with classroom realities? This inquiry forms the backbone of the study and provides a clear direction for the analysis of educational reforms in the local context.

The principal aim of this study is to ascertain how demographic profiles and the availability of technological resources influence the implementation of UDL principles in Moroccan EFL classrooms. To this end, the research seeks to measure how demographic factors and resource availability influence four central domains: Engagement, Representation, Action and Expression, and Barriers to UDL implementation. A secondary aim is to produce empirical evidence that may inform the development of educational policy and practice, particularly in the realm of language instruction. The findings are anticipated to offer valuable insights for policymakers and educators alike, by revealing whether the current reforms are capable of addressing persistent challenges and enhancing learner inclusion. The study's significance is further heightened by its potential to contribute to broader discussions on educational reform and the operationalisation of inclusive pedagogies in contexts similar to Morocco.

This investigation adopts a quantitative approach, employing a structured questionnaire as the principal data collection tool. The survey instrument incorporates the measurement scale devised by Melhem and Al-Rashid (2023), which is designed to assess the four aforementioned domains. The reliability of this scale was confirmed through the computation of Cronbach's alpha scores, yielding .837 for Engagement, .871 for Representation, .862 for Action and Expression, and .725 for Barriers to UDL Implementation. These coefficients indicate a high level of internal consistency across the domains. Importantly, no cultural or linguistic modifications were necessary for the scale's application in the Moroccan context, thereby preserving its original validity and reliability. A pilot study further substantiated the

appropriateness of the instrument for the target population, ensuring that the data collected are both robust and credible.

Notwithstanding the rigour of the research design, the study acknowledges several methodological challenges that may influence the interpretation of its findings. Resistance to the adoption of UDL may arise among educators accustomed to traditional instructional methods, while institutional constraints could limit the extent to which innovative pedagogies are implemented. Additionally, gaps in teacher training might hinder the effective application of UDL principles within classrooms. These potential obstacles have been carefully considered during the design and execution of the study. An iterative process of survey refinement and expert consultation has been employed to mitigate such issues. By recognising and addressing these challenges, the present research offers a more nuanced perspective on the practical difficulties encountered in the implementation of educational reforms in Morocco, thereby contributing valuable insights for future policy development and pedagogical practice.

Literature Review

In recent years, the UDL framework has gained significant attention as a model aimed atenhancing inclusivity and equity in education globally. Morocco, in its ongoing educational reforms, has begun recognizing the importance of adopting more flexible and inclusive teaching strategies, particularly with its diverse student populations. This literature review discusses key themes related to UDL, including how the framework is understood, its role in inclusive education, teachers' perceptions and implementation of UDL, and the challenges to its adoption in Moroccan schools.

Understanding UDL Framework

UDL is a pedagogical framework developed to provide all students, including those with disabilities, an equal opportunity to learn in ways that best meet their individual needs. UDL is based on three core principles: providing multiple means of engagement, representation, and action and expression (Smith-Mutegi & Crisden, 2025; CAST, 2018). These principles are rooted in research that examines howthe brain learns, emphasizing three networks: recognition (the "what" of learning), strategic (the"how" of learning), and affective (the "why" of learning) (Karisa, 2023).

Unlike traditional approaches that retrofit accommodations after curriculum design, UDLembeds flexibility into the design process itself, proactively removing barriers to learning. This allows for diverse learners, including those with disabilities, to access and engage with content meaningfully from the outset. By anticipating the various ways students can engage with content,express their knowledge, and stay motivated (Zannan Alghamdy, 2023), UDL fosters a more equitable learning environment(Xie & Rice, 2021).

UDL in Inclusive Education

Universal Design for Learning (UDL) principles are fundamentally aligned with the ideals of inclusive education, which advocate for providing every student with access to learning environments (Gunderson & Cumming, 2023). Empirical studies have demonstrated that effective UDL implementation increases student engagement and reduces learning barriers. For instance, in South Korea, adapted digital mathematics textbooks designed under UDL guidelines improved learning outcomes for students with disabilities (Lee & Shin, 2023). Similarly, in India, professional development programmes incorporating UDL have contributed to improved

inclusion for children with disabilities (Misquitta & Joshi, 2022). Nevertheless, the practical application of UDL demands extensive teacher training and ongoing support; without these, UDL risks remaining a theoretical ideal rather than a tangible strategy in inclusive classrooms (Almeqdad et al., 2023).

In contrast to UDL, competency-based learning (CBL) emphasises mastery of specific skills and knowledge at an individual pace. CBL is grounded in the establishment of clear, measurable learning objectives and the assessment of students' progress based on demonstrated proficiency (Lopez, Patrick, & Sturgis, 2017; Harkins-Brown, Gillon, & Schanbacher, 2024). Whereas UDL is designed to provide multiple avenues for engagement, representation, and expression, thereby enhancing accessibility and inclusivity, CBL focuses on personalising learning trajectories to ensure that students only advance after mastering defined competencies. Both educational approaches seek to tailor instruction to meet diverse learner needs. However, UDL primarily addresses the variability of learning styles and the need for flexible content delivery, while CBL centres on ensuring that each student achieves a predetermined level of proficiency before progressing. This comparison highlights the distinct yet complementary contributions of each framework, underscoring the importance of selecting an approach that aligns with the specific context and objectives of the educational setting.

Teachers' Perceptions and Implementation of UDL

Teachers are central to the effective implementation of UDL, and their perceptions significantly influence its success. Many educators recognize the benefits of UDL but face challenges in applying it due to limited resources and insufficient training. For instance, Owenz and Cruz (2023) found that while teachers are generally willing to adopt UDL, they often feel inadequately prepared to adapt their teaching strategies accordingly.

A systematic review conducted by Gunderson and Cumming (2023) reported that teachers who participated in UDL professional development showed increased confidence in applying its principles in their classrooms. However, the review also stressed the importance of ongoing training and institutional support to ensure long-term success. Teachers in India, for example, highlighted the need for contextually relevant resources and continued support after professional development programs (Misquitta & Joshi, 2022).

Moreover, logistical challenges such as overcrowded classrooms, limited access to technology, and rigid curriculum structures hinder the full implementation of UDL principles. Despite these barriers, teachers who have successfully integrated UDL have reported improvements in student engagement and classroom inclusivity (Karisa, 2023).

Challenges to UDL Adoption in Moroccan Schools

The adoption of UDL in Moroccan schools faces several challenges. The Moroccan educational system is characterized by large class sizes, limited technological infrastructure, and traditional pedagogical practices, all of which make it difficult to implement UDL fully(Raissouni et al., 2022). Teachers often struggle to balance the demands of the nationalcurriculum with the need for flexible, student-centered approaches like UDL.

One major barrier is the lack of teacher training. Although efforts have been made to introduce inclusive education practices, many teachers report feeling unprepared to implement UDL strategies in their classrooms (Abouabdelkader & Tomalin, 2023). Furthermore, the rigid structure of the national curriculum and assessment systems leaves little room for the flexibility

required by UDL.

Additionally, the cultural and linguistic diversity in Moroccan schools poses a significant challenge to curriculum design, as students often communicate in languages such as Arabic and Amazigh. While UDL's emphasis on multiple means of representation and engagement offers promising avenues to address these issues, its effective implementation requires considerable investment in both technological resources and comprehensive teacher training (Abouabdelkader & Tomalin, 2023). There is a growing national consensus among Moroccan ELT practitioners on the urgent need to transition toward innovative frameworks and teaching practices that encompass curriculum design, syllabus planning, management, and evaluation. Empowering these educators entails equipping them with robust professional training and the necessary tools to exercise autonomy in their practice, free from bureaucratic, material, or structural constraints, thereby enabling them to tailor their instruction to diverse learner needs.

A critical barrier to UDL's successful application in Moroccan classrooms is insufficient teacher training, which remains a persistent challenge despite various initiatives. Initiatives such as the English Teaching Internship Initiative have shown that combining practical teaching experiences with structured training can enhance pedagogical competence and confidence (Addichane & Tamimi, 2023). Evidence suggests that the current teacher education system is fragmented, with an imbalanced focus on academic studies at the expense of practical training—a gap that leaves educators ill-prepared to implement innovative frameworks like UDL effectively (Ouasri, 2021). Evaluations of in-service training programmes, including those under the National Strategy of Continuing Education, indicate that many teachers receive far fewer than the recommended training hours annually, and initiatives such as the GENIE program have yielded mixed results due to issues like heterogeneous trainee knowledge, inadequate follow-up, and inconsistent staff commitment (Lmortaji, 2024; Mechouat, 2024). These challenges underscore the necessity for a more coherent, integrated approach to professional development—one that bridges the divide between academic preparation and practical classroom demands, ultimately empowering educators to adopt and sustain inclusive teaching practices that benefit all learners.

To conclude this literature review, UDL offers a powerful framework for enhancing inclusivity and equity in education. However, its successful implementation requires commitment from educators, policymakers, and institutions. While international examples demonstrate the transformative potential of UDL, Moroccan schools face specific challenges, such as overcrowded classrooms, limited resources, and a lack of teacher training, that must beaddressed for UDL to become a practical reality.

Methodology

This study employed a quantitative research design to investigate teachers' perceptions ofUDL principles in Moroccan classrooms. The research is cross-sectional, capturing data at a single point in time to explore relationships between demographic variables and UDL implementation. Additionally, the study is correlational, examining whether changes in one variable, such as demographic factors, are associated with differences in teachers' perceptions of UDL principles.

Participants

A sample of 108 English teachers (academic year 2024-2025) from middle and high schools in the Fez-Meknes region, as well as adjacent areas, was recruited for this study.

Snowball and purposive sampling techniques were employed to ensure the selection of participants who met the study's specific criteria—teachers working in both public and private educational institutions. Participants were located through teacher WhatsApp groups, where the online questionnaire was shared. Given that all participants had proficiency in English, no language adaptations were necessary. Personalidentifying information such as emails and IP addresses was not collected to preserve anonymity.

Research Instruments

To collect data, this study adopted the scale developed by Melhem and Al-Rashid (2023), titled "Teachers' Perception Towards Implementation of Principles of UDL." This scale was chosen for its relevance to the study's target population, specifically teachers. The questionnaire measures four core domains of UDL: (1) Engagement, (2) Representation, (3) Action and Expression, and (4) Barriers to Implementing UDL. Minor demographic questions were added tobetter understand participant characteristics. The scale was distributed in its original form, as thetarget participants are proficient in English and no further adaptations were required.

Ethical Considerations

Ethical guidelines were strictly followed throughout the research. Participants were first presented with an informed consent statement, explaining the aims and expected outcomes of the study, the concept of UDL, and assurances of confidentiality and anonymity. Respondents were informed that participation was voluntary and that they could withdraw at any time. No personal data such as emails or IP addresses were collected, ensuring the complete anonymity of participants.

Data Collection Procedures

Data were collected via an online questionnaire designed in Google Forms. The survey was distributed through teacher WhatsApp groups to ensure a wide reach within the target population. Teachers were invited to complete the questionnaire at their convenience, and participation was voluntary. A pilot test of the questionnaire was conducted to ensure clarity and functionality in the Moroccan context, and no issues were observed, allowing for the original scale to be utilized without modifications.

Data Analysis

After data collection, responses were imported into Microsoft Excel for initial data cleaning and preparation. This step involved checking for missing values, formatting variables correctly, and standardizing categorical data. Quantitative analysis was performed using IBM SPSS 27. Descriptive statistics, including means, medians, and standard deviations, were calculated for each of the four UDL domains. In addition, T-tests and multiple regression analyses were employed to examine relationships between demographic variables and teachers' perceptions of UDL implementation.

Validity and Reliability

The reliability of the adopted scale was confirmed using Cronbach's alpha scores for each of the four domains: Engagement ($\alpha = .837$), Representation ($\alpha = .871$), Action and Expression ($\alpha = .862$), and Barriers to Implementing UDL ($\alpha = .725$). These scores indicate good internal

consistency across the domains. As no cultural or linguistic modifications were necessary, the scale maintained its original validity and reliability within the Moroccan context. Pilot testing further validated the appropriateness of the scale for the target population, confirming its suitability for this study.

Findings

This section presents the results of the study and is divided into two parts: descriptive statistics and inferential statistics. The first part provides an overview of the data collected, including means, medians, and standard deviations for the key variables related to teachers' perceptions of UDL principles. The second part delves into inferential statistics, where various statistical tests, such as T-tests and multiple regression analyses, are used to examine the relationships between demographic factors and UDL implementation.

Descriptive Statistics

The descriptive statistics offer a detailed overview of the demographic characteristics, teaching experience, and work environments of the sample. The 108 participants in the study range in age from 22 to 62 years, with a mean age of 39.19 and a median age of 40. This indicates that the majority of the teachers are in their late thirties or early forties,likely contributing a considerable amount of professional experience to their roles. The most frequently occurring ages in the sample are 42 and 43, which together account for 17.6% of the total. This age distribution reflects a diverse range of life stages and experiences, providing valuable perspectives on the implementation of UDL in EFL classrooms. The gender distribution of the sample is relatively balanced, with 52.8% female participants and 47.2% male participants.

Regarding teaching experience, the participants exhibit a broad spectrum of years in the profession. The number of years of teaching experience ranges from 1 to 36 years, with a mean of 13.88 years and a median of 14 years. This diversity highlights the fact that the study includes both novice and veteran teachers. Notably, 11.1% of the participants have only one year of teaching experience, while a significant proportion have over 20 years of experience. Such a variety in teaching tenure is critical for understanding how teachers at different career stages perceive and implement UDL, with more experienced teachers potentially having different insights compared to those newer to the profession.

In terms of work environment, 98.1% of the participants work in public schools, while only 1.9% teach in private institutions. Additionally, 65.7% of the participants teach in urban areas, compared to 34.3% in rural locations. The urban-rural divide is an important factor, as access to resources and infrastructure may differ significantly between these environments, potentially influencing teachers' ability to implement UDL principles effectively. For instance, while 76.9% of the teachers report using digital materials in their teaching, only 51.9% have easy access to video projectors. Furthermore, while 59.3% of the participants indicated they had engaged in continuous teacher training in the past 12 months, a significant portion (40.7%) had not. These disparities suggest that infrastructural and professional development challenges may be obstacles to the broader adoption of UDL, particularly in rural and under-resourced schools.

Inferential statistics

To deepen our understanding of the relationships between demographic variables and teachers' perceptions of UDL principles, both independent sample t-tests and multiple regression

analyses were conducted. The t-tests explored differences in UDL domain scores—Engagement, Representation, Action & Expression, and Barriers—based on gender, teaching location (urban vs. rural), participation in continuous teacher training, use of digital materials, and access to video projectors. In addition, multiple regression analyses were employed to assessthe extent to which demographic factors such as age, years of teaching experience, and access toresources predict UDL adoption. The following section presents and interprets the results of these analyses, highlighting both significant and non-significant findings.

Interpretation of the T-Test Results

The independent samples t-test was conducted to explore gender differences, teaching location (urban vs. rural), continuous teacher training participation, use of digital materials, and access to video projectors in relation to the four UDL domains.

Gender Differences

The analysis revealed a significant gender difference in perceived barriers to implementing UDL, with male teachers (M = 2.97, SD = 0.82) reporting significantly fewer barriers than female teachers (M = 3.29, SD = 0.67), $t(106) = -2.254$, $p = .026$. No significant gender differences were observed in the other UDL domains.

Urban vs. Rural Teaching Location

No statistically significant differences were found between rural and urban teachers in any of the UDL domains, indicating that teaching location does not significantly influence engagement, representation, action and expression, or perceived barriers to UDL implementation.

Continuous Teacher Training Participation

The results showed no significant differences between teachers who participated in training and those who did not across all four UDL domains, indicating that recent training participation did not significantly impact teachers' UDL practices.

Use of Digital Materials in Teaching

Teachers who used digital materials scored significantly higher on engagement ($t(106) = 2.246$, $p = .027$), representation ($t(106) = 2.402$, $p = .018$), and action and expression principles ($t(106) = 3.005$, $p = .003$). Additionally, those who did not use digital materials perceived significantly more barriers ($t(106) = -2.943$, $p = .004$), underscoring the importance of digital resources in facilitating UDL implementation.

Availability of Video Projectors

Teachers with access to video projectors reported significantly higher scores in engagement ($t(106) = 2.337$, $p = .021$), representation ($t(106) = 2.472$, $p = .015$), and action and expression ($t(106) = 2.565$, $p = .012$) domains. Additionally, those without access perceived more barriers to UDL implementation ($t(106) = -2.680$, $p = .009$). This suggests that video projectors play a crucial role in reducing barriers and enhancing UDL practices in the classroom.

Interpretation of the Regression

Age and UDL Domains

- **Engagement Principle:** Age was found to be a significant predictor of teachers' engagement with UDL principles ($r = .254$, $p = .004$). The regression model accounted for 6.4% of the variance in engagement scores ($R^2 = .064$, $F(1,106) = 7.307$, $p = .008$), indicating that older teachers tend to engage more with UDL. For each additional year in age, engagement scores increased by 0.021 points ($B = 0.021$, $p = .008$).
- **Representation Principle:** Age also significantly predicted representation scores ($r =$

.220, p = .011). Age accounted for 4.9% of the variance in these scores (R^2 = *.049*, F(1,106) = 5.411, p = .022). For every additional year in age, representation scores increased by 0.018 points (B = 0.018, p = .022).

- **Action and Expression Principle:** Age was a significant predictor of action and expression scores, albeit with a weaker effect (r = .197, p = .021). The model explained 3.9% of the variance (R^2 = *.039*, F(1,106) = 4.268, p = .041), with each additional year increasing scores by 0.016 points (B = 0.016, p = .041).
- **Barriers to Implementing UDL:** No significant relationship was found between age and perceived barriers (r = -.004, p = .482). Age did not account for any variance in barrier scores (R^2 = *.000*, F(1,106) = 0.002, p = .964), indicating that age had no meaningful impact.

Years of Teaching Experience and UDL Domains

- **Engagement Principle:** Teaching experience was a significant predictor of engagement (r = .217, p = .012), explaining 4.7% of the variance in scores (R^2 = *.047*, F(1,106) = 5.225, p = .024). For each additional year of experience, engagement scores increased by 0.019 points (B = 0.019, p = .024).
- **Representation Principle:** Although there was a positive correlation between teaching experience and representation (r = .168, p = .041), the regression analysis did not yield significant results. Teaching experience explained only 2.8% of the variance (R^2 = *.028*, F(1,106) = 3.095, p = .081).
- **Action and Expression Principle:** While there was a positive correlation (r = .173, p = .036), teaching experience was not a significant predictor of action and expression scores in the regression analysis (R^2 = *.030*, F(1,106) = 3.281, p = .073).
- **Barriers to Implementing UDL:** There was no significant relationship between teaching experience and perceived barriers (r = .115, p = .119). Teaching experience explained only 1.3% of the variance in barrier scores (R^2 = *.013*, F(1,106) = 1.412, p = .237).

Discussion

The findings of this study demonstrate that demographic profiles and resource availability exert a substantial influence on the enactment of UDL principles in Moroccan EFL classrooms, while also revealing that current educational reforms are only partially aligned with classroom realities. Specifically, female teachers report significantly more obstacles to UDL implementation than their male counterparts, a phenomenon that appears to be rooted in entrenched societal expectations and traditional gender roles, which impose additional burdens that compromise their capacity to adopt innovative pedagogical frameworks. In contrast, older educators, benefiting from extensive experience and refined classroom management skills, tend to exhibit a greater aptitude for integrating UDL practices, thereby indicating that age and experience are important predictors of successful UDL adoption.

Furthermore, the study highlights that the effective use of digital materials and the availability of video projectors are instrumental in facilitating UDL across its key domains of engagement, representation, and action and expression; these technological resources provide multiple means of content delivery and learner participation, which are essential for addressing diverse learning needs. However, the findings also underscore that many Moroccan schools, particularly those in rural regions, suffer from inadequate technological infrastructure and

limited access to these critical resources. This disparity suggests that the top-down reforms, which advocate for a broad implementation of UDL, have not fully accounted for the practical constraints experienced by educators on the ground. In light of these observations, it becomes evident that while demographic factors such as gender and age significantly affect UDL implementation, the availability of digital resources is equally decisive, and that current reform initiatives must be more closely aligned with the material and cultural realities of Moroccan classrooms to achieve their intended outcomes.

Gender and Perceived Barriers to Implementing UDL

One of the most striking findings in this study is the significant gender difference in perceived barriers to implementing UDL principles, with female teachers reporting more obstacles than their male counterparts. This result aligns with broader literature that suggests female educators often face unique challenges in the teaching profession, often influenced by societal expectations and cultural norms. As observed in other studies, female teachers, particularly in developing countries, may experience additional burdens due to their dual roles aseducators and caregivers, which can lead to increased fatigue and decreased capacity to adopt innovative educational frameworks like UDL (Silman et al., 2019).

In the Moroccan context, where traditional gender roles still hold significant sway, these findings may be attributed to the societal pressures placed on female teachers. They are expected to balance multiple roles, such as being caregivers, household managers, and professional educators. These compounded expectations may create emotional and cognitive overload, diminishing the energy and focus required for the effective implementation of complex teaching frameworks such as UDL (Raissouni et al., 2022). Moreover, students' perceptions of female teachers as "weak" or "less authoritative," especially in crowded classrooms, may contribute to the challenges they face in maintaining discipline and engagement. This aligns with research by Abouabdelkader and Tomalin (2023), which highlights how societal expectations significantly influence classroom dynamics and teacher efficacy. Future policies should consider these gendered dimensions when offering support for the implementation of inclusive pedagogical practices.

Use of Digital Materials and UDL Implementation

The significant positive correlation between the use of digital materials and the successful implementation of UDL principles across all domains (Engagement, Representation, Action and Expression, and Barriers) further emphasizes the importance of integrating technology into the classroom. This finding is consistent with previous studies suggesting that digital media not only facilitates differentiated instruction but also provides multisensory experiences, enhancing engagement for diverse learners (CAST, 2018). Digital materials, such as videos, interactive platforms, and online quizzes, offer students varied means of accessing content, expressing their learning, and engaging with lessons, which are the core tenets of UDL (Dalton, 2019; Dalton & Brand, 2012; Gronseth & Dalton, 2020).

However, it is important to note that Moroccan schools, particularly in rural areas, often lack the necessary technological infrastructure, such as computers, projectors, and internet access, to fully harness the benefits of digital materials in classrooms. The findings suggest that administrators and policymakers should prioritize equipping schools with technological resources, particularly in EFL classrooms, where multimodal learning can significantly enhance

language acquisition. Moreover, the use of digital tools in classrooms can foster a more inclusivelearning environment, addressing diverse learning preferences and ensuring that all students, regardless of ability, have access to the curriculum. Teachers and administrators should therefore strive to increase the use of computer-assisted lessons and interactive technologies in their teaching environments, as these have been shown to augment the inclusivity and representation of various learner profiles (Abouabdelkader & Tomalin, 2023).

Availability of Video Projectors and UDL Adoption

The significant association between the availability of video projectors in classrooms and higher levels of UDL implementation across the domains of Engagement, Representation, and Action and Expression highlights the importance of audiovisual aids in modern teaching environments. Video projectors allow teachers to present information in varied formats, catering to visual, auditory, and kinesthetic learners. This flexibility is a key component of UDL, which advocates multiple means of representation and engagement to support diverse learning needs (CAST, 2018).

The findings of this study strongly suggest that equipping classrooms with video projectors can reduce the barriers to UDL implementation that teachers currently face. This aligns with the findings of Kelly et al. (2023), who argue that technological tools in the classroom facilitate a broader range of teaching strategies, thus enhancing student engagement and teacher efficacy. In the Moroccan context, where schools are often under-resourced, investing in affordable technology such as projectors could be a practical first step toward creating more inclusive learning environments. Educational administrators should take note of these findings and prioritize the allocation of resources to equip classrooms with video projectors, as they not only enrich the student learning experience but also provide teachers with a valuable tool for varying their instructional approaches.

Experience and UDL Implementation

The regression analysis revealed that age had a significant and positive effect on three UDL domains: Engagement, Representation, and Action and Expression. Older teachers, with more years of experience, appear to engage more with UDL principles than their younger counterparts. This finding is consistent with research that suggests that older, more experienced teachers often have better classroom management skills, deeper pedagogical knowledge, and more confidence in adopting new teaching frameworks (Sharma & Sokal, 2015). As teachers accumulate experience, they are likely to develop greater insight into how to tailor their teaching strategies to meet the needs of diverse learners, which is the essence of UDL.

In the Moroccan context, these findings suggest that policymakers and school administrators should leverage the experience of older teachers when implementing new educational frameworks like UDL. Contrary to some assumptions that younger teachers are more adept at adopting new methodologies, this study suggests that experience and age play a critical role in successful UDL implementation. Therefore, recruiting decisions should focus not only onage but also on the breadth of teaching experience a candidate brings to the table. This finding aligns with Abouabdelkader and Tomalin's (2023) observation that experienced teachers tend to be more adaptable and effective in diverse classroom settings.

Locally, with the current transformation of extending English language teaching to grades 7 and 8 in Moroccan secondary schools, ELT practitioners are now faced with the

challenge of how to meet the interests, styles and high expectations of learners in English language teaching and learning. The shift towards UDL calls into question the ability of the competency-based approach to deliver the expected outcomes after two decades of experience at the middle-high school level. The principles of UDL: representation, engagement, emotion and expression seem to be alarming concepts that theorise ELT practices in Moroccan classrooms. The challenge is that practitioners sometimes resort to traditional teaching methods to meet the needs of learners who are still struggling with the basics of the language. This is attributed to the lack of updated pedagogical guidelines at the meso-level (between the macro and micro levels) that can help ELT practitioners have a clear roadmap on how to match the UDL theoretical framework with the teaching content (syllabus) and the use of student textbooks.

A shift towards UDL at this time should be deliberate and cautious, taking into account the dominant legacy of teaching cultures that cannot produce the same results and have the same impact on learning from one teaching environment to another. As each practitioner has his/her own teaching subcultures that stem from the root culture of 'curriculum', the implementation of UDL requires an in-depth examination of the differences between learning styles and teachers' teaching styles. Moving from a state of learner disengagement to engagement practices should take into account age, gender, social, linguistic and cultural differences, bearing in mind that EFL language classes are heterogeneous and located in both rural and urban locations.

In response to the previous points, educational reforms demonstrate the failure of top-down strategies at the macro level to achieve their intended goals, as they marginalise the potential role of practitioners, whose experiences can serve as a suggestive professional force at the micro level (on the ground). This would perhaps guarantee the possible success of strategic and futuristic visions and minimise programme shortcomings in education. Despite their disempowerment from educational policy-making, both male and female ELT practitioners are entering the 21st century with high expectations of self-empowerment.

Conclusion

The primary aim of this study was to determine how demographic profiles and the availability of technological resources affect the enactment of Universal Design for Learning principles in Moroccan EFL classrooms. The findings indicate that significant disparities exist in the perceptions of obstacles between male and female educators, with female teachers reporting considerably more challenges; such results suggest that entrenched societal expectations and traditional roles may impede the successful adoption of UDL frameworks by female practitioners. Furthermore, the study reveals that the incorporation of digital materials and the presence of video projectors in classrooms are strongly associated with enhanced implementation of UDL, as these resources facilitate multiple modes of learner engagement, content representation, and expressive action. In addition, teachers possessing greater seniority and extensive instructional experience demonstrate a higher capacity for integrating UDL practices, thereby underscoring the influence of professional maturity on overcoming pedagogical challenges. Collectively, these outcomes underscore the necessity for targeted policy measures and infrastructural improvements to address gender-specific issues and resource deficiencies, ensuring that current educational reforms are more closely aligned with the pragmatic realities of classroom practice.

Despite these important findings, this study has several limitations. First, the sample size, while adequate for statistical analysis, may not fully represent the diversity of the teaching

population in Morocco, particularly in rural and underserved regions. Additionally, the cross-sectional nature of the study restricts the ability to establish causal relationships between the variables; it merely highlights associations without determining the directionality of these relationships. Future studies could benefit from longitudinal designs that track changes in teachers' implementation of UDL principles over time, particularly in response to targeted interventions or policy changes.

Further research is necessary to build on these findings. Future studies could explore the specific societal and cultural factors that contribute to female teachers' perceptions of greater barriers to UDL implementation. Additionally, research could investigate how different forms of professional development, particularly in the use of digital technologies, can mitigate some of the challenges teachers face in adopting UDL principles.

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