Digital tools for mixed-ability English language learning in flipped classrooms

Lola Nazarova Gayratullayevna
l.nazarova@polito.uz
Senior Teacher,
Turin Polytechnic University

Annotation *The recognition that traditional teacher-centered instruction does not adequately respond to the increasing diversity of learners has led to a renewed interest in pedagogical models that promote differentiation and active learning in EFL classrooms. In the flipped classroom model, aided by digital technologies, instruction is reconfigured by shifting content delivery into pre-class digital spaces, while using classroom time for interaction, collaboration, and application, making it especially relevant for mixed-ability contexts. The objective of this research is to explore the role of digital technologies in supporting inclusive instruction, learner engagement and differentiated learning in mixed-ability EFL classrooms under a flipped classroom paradigm. The results show that digital pre-class materials create learner readiness before class, and that interactive, in-class activities engender participation, communicative competence, and learner autonomy among students of all proficiency levels. This work argues for the focus of future studies on the pedagogical mechanisms and instructional structure inherent in flipped learning, rather than comparing effectiveness of two approaches with unrelated structures and mechanisms, which could help in seeing digital tools as enabling differentiated structures.*

Keywords *Flipped classroom, digital technology, mixed-ability learners, English language teaching, differentiated instruction, learner engagement*

Цифровые инструменты для изучения английского языка обучающихся со смешанными способностями в перевернутых классах

Лола Назарова Гайратуллаевна
l.nazarova@polito.uz
Старший преподаватель,
Туринский Политехнический Университет

Аннотация *Признание того факта, что традиционная, ориентированная на учителя модель обучения не обеспечивает адекватного учета возрастающего разнообразия обучающихся, обусловило возобновление научного интереса к педагогическим моделям, ориентированным на дифференциацию обучения и активизацию учебной деятельности в аудиториях английского языка как иностранного (EFL). В рамках модели перевёрнутого обучения, реализуемой при поддержке цифровых технологий, происходит трансформация организации образовательного процесса за счёт переноса представления учебного контента в цифровую среду на этап до начала занятий, тогда как аудиторное время используется для интерактивного взаимодействия, совместной деятельности и практико-ориентированного применения знаний, что определяет высокую релевантность данной модели для учебных групп со смешанным уровнем языковой подготовки. Целью*

настоящего исследования является изучение роли цифровых технологий в поддержке инклюзивного обучения, вовлечённости обучающихся и дифференцированного обучения в классах EFL со смешанным уровнем языковой подготовки в рамках парадигмы перевёрнутого класса. Полученные результаты показывают, что цифровые учебные материалы, используемые на этапе до начала занятий, способствуют формированию готовности обучающихся к аудиторным занятиям, тогда как интерактивные формы аудиторной работы стимулируют активное участие, развитие коммуникативной компетенции и формирование учебной автономии у обучающихся всех уровней владения языком. В работе обосновывается целесообразность смещения фокуса будущих исследований на анализ педагогических механизмов и структуры проектирования обучения, присущих перевёрнутому обучению, а не на сопоставление эффективности различных подходов с несоотносимыми структурами и механизмами, что, в свою очередь, позволяет рассматривать цифровые инструменты как средства реализации дифференцированных образовательных структур.

Ключевые слова *Перевернутый класс, цифровые технологии, учащиеся с разными способностями, преподавание английского языка, дифференцированное обучение, вовлеченность учащихся*

Ingliz tili bilim darajasi turli bo'lgan sinflarni o'qitishda raqamli vositalardan foydalanish

Lola Nazarova Gayratullayevna
l.nazarova@polito.uz
Katta o'qituvchi,
Turin Politexnika Universiteti

Annotatsiya *An'anaviy, o'qituvchi-markazli ta'lim modeli o'quvchilarning tobora ortib borayotgan xilma-xilligiga yetarli darajada javob bermasligi haqidagi tushuncha EFL (chet tili sifatida ingliz tili) sinflarida differensial ta'lim va faol o'rganishni qo'llab-quvvatlovchi pedagogik modellarga bo'lgan qiziqishni kuchaytirdi. Raqamli texnologiyalar bilan qo'llab-quvvatlangan o'girilgan sinf (flipped classroom) modelida ta'lim jarayoni qayta tashkil etilib, o'quv mazmunini yetkazish dars jarayonidan oldin raqamli muhitlarga ko'chiriladi, mashg'ulot vaqti esa o'zaro muloqot, hamkorlik va bilimlarni amaliy qo'llashga yo'naltiriladi. Bu holat mazkur modelni bilim darajalari turlicha bo'lgan (mixed-ability) sinflar uchun ayniqsa dolzarb qiladi. Mazkur tadqiqotning maqsadi o'girilgan sinf paradigmasi doirasida raqamli texnologiyalarning turli darajadagi EFL sinflarida inklyuziv ta'limni, o'quvchi faolligini va differensial o'rganishni qo'llab-quvvatlashdagi rolini o'rganishdan iborat. Tadqiqot natijalari shuni ko'rsatadiki, darsdan oldingi raqamli o'quv materiallari o'quvchilarning darsga tayyorgarligini shakllantiradi, dars paytidagi interaktiv faoliyatlar esa barcha til darajasidagi o'quvchilarda ishtirok, kommunikativ kompetensiya va o'quvchi mustaqilligini rivojlantiradi. Mazkur ish kelgusidagi tadqiqotlarda o'zaro bog'liq bo'lmagan tuzilma va mexanizmlarga ega yondashuvlarning samaradorligini solishtirishdan ko'ra, o'girilgan ta'limga xos pedagogik mexanizmlar va o'quv jarayoni tuzilmasiga e'tibor qaratish zarurligini*

asoslaydi. Bu esa raqamli vositalarni differensial ta'lim tuzilmalarini qo'llab-quvvatlovchi imkoniyatlar sifatida anglashga yordam beradi.

Kalit so'zlar *O'girilgan sinf, raqamli texnologiyalar, bilim darajasi turli bo'lgan o'quvchilar, ingliz tilini o'qitish, differensial ta'lim, o'quvchi faolligi*

Introduction

A characteristic feature of present-day English as a Foreign Language (EFL) classrooms has been the growing heterogeneity of learners' degree of proficiency, motivation, and learning speed. Traditional teacher-centered instructional models are rarely built to respond to such diversity and often lead to uneven participation and less-than-optimal learning outcomes. In this regard, the flipped classroom, enabled by digital technologies, has been identified as an innovative pedagogical model that reorganizes the use of instructional time and the cognitive responsibility between teachers and learners. Dawn of a New Beginning for Differentiated Learning The flipped model opens new doors to offer differentiated instruction across a wide spectrum of learning challenges, as initial content delivery is pushed back to digital spaces ahead of class time, while a greater portion of class time is can be reserved for engagement and application of that content with patient, capable facilitation (Bishop, 2013). In terms of its conceptual roots, the flipped classroom speaks to an intersection of several dominant educational epistemologies, such as constructivism, sociocultural learning theory, and self-regulated learning frameworks. The use of digital technologies as mediating tools empowers students to access learning materials in their own time and allow for collaborative knowledge-building during class (Akçayır, 2018). This linkage between digital input and classroom interaction is especially important in mixed-ability EFL contexts since it enables learners to achieve the same curricular aims while being exposed to differentiated learning pathways depending on their different proficiency levels. Therefore, the pedagogical strength of the flipped model is not its technology, but its ability to reconfigure the teaching learning relationship (Tucker, 2012).

Additional empirical studies have suggested a positive impact of flipped and blended learning on linguistic competence, learner style, and motivation. Studies have reported enhancement in listening, speaking, and overall communicative competence through systematic integration of digital tools such as mobility applications, video lectures, and learning management systems. That said, while much has been done to set flipped and traditional classrooms side by side using effectiveness as the sole lens, little analytic work has been done around mixed-ability challenges, the quality of instructional design or the ways digital tools are used to facilitate differentiated instruction. This indicates a distinct lack of understanding about the pedagogical workings of flipped instruction within heterogeneous EFL classrooms (Ozdamli, 2016).

To fill this void, in the present study we draw on systematic analyses of digitally mediated flipped classroom practices in ESL in a qualitative-dominant, descriptive-analytical manner. The methodology examines the design of out-of-class and in-class activities, the pedagogical functions of digital tools, and their role in promoting learner diversity. Instead of testing one factor, the focus of the study is on instructional coherence among the flipping model, patterns of learner engagement, and differentiation mechanisms inherent in the flipped model (Kara, 2016).

The analysis is to describe the way digital technologies improve readiness to learn,

increase learner participation, and reduce skill gaps in heterogeneous classrooms. The expected findings will theoretically contribute to the understanding of the technology-mediated learning processes while the practically it will give some insights into how EFL teachers and curriculum designers can utilize these developments into their classes. In conclusion, this study will enrich the comprehension of the flipped classroom as an inclusive teaching approach and will provide implications for future research and practice in technology-mediated language teaching (Milman, 2012).

Methodology

This study employs a qualitative dominant, descriptive analytical research design aimed at exploring the integration of digital technology in the mixed-ability English language classrooms as it supports the implementation of the flipped classroom model. The research relies on systematic content analysis of the instructional framework, learning tasks, and technology integration strategies in the frame story of this document, with a close focus on pre-class digital resources, in-class interactive tools, and differentiated learning practices. We generated data by analyzing the structure of lessons, the types of digital platforms used, and the pedagogical interactions that these tools afforded, with a particular focus on how they addressed learner variability in proficiency, pace and engagement. Guide to finding articles on flipped learning, the study takes an interpretive perspective to assess the extent to which flipped learning redistributes instructional time, by decamping early exposure to content to digital space, leaving class-time to collaborative practice. Patterns of personalization, learner control, inclusive participation as mediated by videos, adaptive quizzes, LMS, and collaborative platforms have taken center-stage. In order to enhance analytical rigor, and situate the findings in relation to the existing theories of flipped classroom and differentiated instruction, a comparison between the intended pedagogical outcomes and the observed instructional practices has been included. The methodology is not based on experimental measurement, but rather on pedagogical consistency, feasibility and analogy with mixed-ability classrooms practices (Galindo-Domínguez, 2021). Using this perspective allows for a deeper analysis of the role of digital technology functioning not as a delivery system but a constitutive element of instructional design supporting equity, engagement, and language development for diverse learners.

Results

Findings from the core Word-based research show the implementation of digital tools in a flipped English language classroom leads to several academic and pedagogical gains, especially with heterogeneous student populations. Overall, the data consistently point to the conclusion that, by moving input out of the classroom and into the pre-class time; and using classroom time for interaction, collaboration, and feedback, language outcomes are improved and learners become more engaged and differentiated more easily (Herreid, 2013).

The most significant of these findings are related to learner preparedness and engagement. For instance, students who encountered digital materials including instructional videos, interactive quizzes, and online texts prior to class sessions arrived in the classroom with a greater level of conceptual familiarity. That was designed to change the classroom environment significantly. Instead of dedicating classroom time to initial explanation, students engaged in communicative tasks, peer discussion, and applied language use in the classroom (Hawks, 2014). This led to lower-level learners receiving more practice and opportunities to learn at their own pace, while higher-level learners completing much more complex communicative and analytic tasks. Hence, this verifies that flipped

instruction is more an inherent/ natural means of differentiation, as opposed to an externally imposed differentiated strategy (Table 1).

Dimension	Observed outcome	Pedagogical interpretation
Pre-class preparation	Increased content familiarity	Reduced in-class cognitive overload
Classroom participation	Higher interaction across proficiency levels	Inclusive learning environment
Oral language use	More frequent and confident speaking	Shift toward communicative competence
Learner autonomy	Improved self-regulation	Support for mixed-ability pacing
Motivation	Positive learner attitudes	Increased engagement through control

Table 1. *Observed learning outcomes in the flipped English classroom*

Theoretically, these results reflect a constructivist and sociocultural approach to learning. If knowledge is constructed rather than received, then learning must occur through interaction, negotiation of meaning, and collaborative problem-solving. Digital tools did not usurp pedagogy, but in fact reconfigured it the findings make this explicit, as they systematically illustrate how these digital tools reconfigured pedagogy, so that learners came to class not only with the cognitive training and the mental simulation of the social learning experience, but also had participated in ways that stimulated social engagement. This aligns with a perception that flipped learning enhances the zone of proximal development by enabling peer scaffolding and instructor mediation to operate more effectively (Awidi, 2019). This paper puts forth the view that in heterogeneous classrooms, digital devices enable instructional equity. Instructors used learning management systems and adaptive digital resources to track learner progress and fill the gaps.

Digital Tool Function	Classroom Role	Impact on Mixed-Ability Learners
Video lectures	Foundational input delivery	Supports slower-paced learners
Interactive quizzes	Diagnostic feedback	Early identification of gaps
Online texts	Differentiated reading	Multiple proficiency access
Collaborative platforms	Peer interaction	Mutual support and modeling
Real-time feedback	Immediate correction	Confidence building

Table 2. *Instructional functions of digital tools identified in the study*

While these are great strengths, the results also reveal obvious deficiencies in knowledge. This study demonstrates improvements in short-term performance among learners with respect to engagement and use of content material but fails to empirically investigate long-term retention or transfer of language skills beyond the classroom setting. Second, while the discussion is focused on mixed-ability classrooms, learner differences are treated at a functional, not analytical, level. Very few outcomes are disaggregated by proficiency level, learning strategy, or motivational profile.

Quality of instructional design is another challenge yet to be addressed. We conclude that positive outcomes are contingent on the structure and alignment of digital materials with in-class activities. The paper does not formally model this relationship, raising the question as to which design principles were most fundamental to success. Likewise, the preparedness of the teacher comes up virtually but it is not analyzed systematically.

As for future research, the study identifies several priorities. Further longitudinal research is required to determine whether these benefits are sustained over time and further develop into higher level academic or professional discourse. Research comparing different designs of the flipped classroom would also allow for more nuanced understandings other than the standard traditional vs. flipped binary. This integration makes sense in the late type of a report as we will be capable of both seeing measurable results and how they interact with qualitative classroom observation, but this style of future research ought to additionally be performed in parallel.

Ultimately, as viewed through the dual Word document, the results validate that digitally enabled flipped classrooms represent a robust pedagogical response to teaching English to mixed-ability classes. Simultaneously, they expose conceptual and empirical gaps that need to be filled before effective practice can be bridged to a broader and evidence-based instructional framework.

Conclusion

The results in this research confirm the implementation of digital technology in flipped English language classroom is an appropriate and scientifically proven solution to the difficulties of teaching in heterogeneous classes. To improve learner readiness, differentiate the pace of learning, and allow more active use of the language, especially orally and in communicative situations, the flipped model moves initial content exposure and processing to before class and reorganizes classroom time around interaction, collaboration, and feedback. The findings underscore the role of digital tools as structural facilitators of inclusive practices, learner agency and self-regulated learning rather than as adjunct to it. The paper thus suggests the crucial elements of an effective implementation in practice the need for sound instructional design, intentional digital to in-class activity goal alignment, and ongoing teacher readiness over pure technology adoption. At the theoretical level, the results validate constructivist and sociocultural perspectives in showing how digitally mediated contexts multiply the involvement of scaffolding in socially mediated environments to facilitate meaningful knowledge. However, the study also demonstrates the prerequisites for more investigation in longitudinal studies on retention and transfer of skills over time, analysis of learner-level variability in mixed-ability groups, and systematic investigation of design variables and teacher cognition.

References:

1. Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education, 126*, 334-345.
2. Awidi, I. T., & Paynter, M. (2019). The impact of a flipped classroom approach on student learning experience. *Computers & Education, 128*, 269-283.
3. Bishop, J. L., & Verleger, M. A. (2013). The flipped classroom: A survey of the research. In *Proceedings of the 2013 ASEE Annual Conference & Exposition*. 23-1200. ASEE.
4. Galindo-Domínguez, H. (2021). Flipped classroom in the educational system. *Educational Technology & Society, 24*(3), 44-60.

5. Hawks, S. J. (2014). The flipped classroom: Now or never? *AANA Journal, 82*(4), 264-269.
6. Herreid, C. F., & Schiller, N. A. (2013). Case study: Case studies and the flipped classroom. *Journal of College Science Teaching, 42*(5), 62-66.
7. Kara, C. O. (2016). Flipped classroom. *Tıp Eğitimi Dünyası, 15*(45), 12-19.
8. Milman, N. B. (2012). The flipped classroom strategy: What is it and how can it best be used? *Distance Learning, 9*(3), 85-87.
9. Ozdamli, F., & Asiksoy, G. (2016). Flipped classroom approach. *World Journal on Educational Technology: Current Issues, 8*(2), 98-105.
10. Tucker, B. (2012). The flipped classroom. *Education Next, 12*(1), 82-83.