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Article

Generative AI as a Disrupter of Language Education

Richard Watson Todd
King Mongkut's University of Technology Thonburi, Bangkok, Thailand

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Abstract
Since the launch of ChatGPT, generative artificial intelligence (genAI) has widely affected society, but the full potential impacts on language education are yet to be felt. Most discourse on genAI in language education views it as a facilitator of existing practice, yet genAI has potential for disruptiveness. Based on the theory of disruptive innovation, this paper looks at three case studies of genAI use in education representing different levels of disruptiveness: the sustaining enhancing innovation of combining genAI and flipped classrooms, the sustaining challenging innovation of genAI-aided active learning, and the disruptive innovation of the teacherless classroom. Applying these models to TESOL, a program to increase the likelihood of genAI use in TESOL being beneficial is proposed.

Keywords
Generative AI, ChatGPT, innovation, disruption

1 Introduction

Since the launch of ChatGPT in November 2022, artificial intelligence text generators, also known as generative AI (genAI), have had massive impacts on society, such as threatening the careers of paralegals. Some teachers may be concerned that their own jobs will also be under threat in the future, since, in language education, the impacts of genAI are yet to be fully felt. Most educational institutions are continuing as usual, perhaps with the occasional warning about using genAI unethically or integrating genAI in a few lessons. Yet, genAI has the potential to disrupt language education and substantially change or even perhaps threaten our jobs as teachers. What the long-term impacts of genAI on language education will be is unclear, but the TESOL community would benefit from considering various possible future scenarios. From a utopian perspective, such future planning would enable the field to ensure that the greatest benefits accrue to innovations combining genAI and education. From a dystopian viewpoint, being prepared allows the field to resist changes that could ultimately be detrimental.

Email: irictodd@kmutt.ac.th

2 A Brief History of GenAI

Prior to ChatGPT's launch, several more limited genAI applications were available. For example, given an opening sentence, 6b.eleuther.ai was an effective tool for writing paragraphs. These tools were largely overlooked in education, although Tangkitjaroenkun (2023) provides an interesting application of 6b.eleuther.ai to develop students' literary competence. ChatGPT's ability to understand and produce language effectively in multiple contexts changed the playing field, prompting the development of other AI applications such as Google Bard (now Gemini) and Perplexity.ai, and forcing educators and educational institutions to pay attention.

Many of the initial reactions to genAI in education saw these tools as an obstacle to 'proper' education. Numerous school districts and universities banned their use in a move reminiscent of reactions to previous technological innovations such as Google Translate. Concerns were raised about privacy issues, accuracy and the potential for bias (all areas the AI developers are trying to ameliorate). More relevant to education were worries about students cheating leading to changes in assessment practices including a return to in-class paper-and-pencil tests and an emphasis on oral assessments (Kohnke et al., 2023).

Within a few months, the climate shifted from viewing genAI as an obstacle to seeing it as a potential facilitator. Bans on genAI use were mostly rescinded and the discourse moved to searching for ways that teachers and students could beneficially use genAI. In the first half of 2023, several articles were published suggesting ways in which genAI could be applied to facilitate education (e.g., Javaid et al., 2023 list 27 applications). Many of these suggestions are useful and effective with some easing teachers' workloads and others enabling outside-class learning for students. However, nearly all of the articles and websites suggesting uses of genAI in education simply provide ways of facilitating current educational practice which appears to be taken as a given. Educational objectives and teaching approaches largely remain the same with genAI a support to make life easier. Recently, though, some more transformational uses of genAI in education have been implemented which may indicate directions for future changes in TESOL.

In this paper, I will examine three educational innovations using genAI that represent different levels of disruptiveness. Before looking at the innovations, we need to understand the nature of disruptive innovation.

3 GenAI as a Disruptive Technology

Many of our everyday behaviors have changed massively in the last few years. Paying with cash is a rarity, we shop online, and we order taxis rather than wait for them. These changes are due to disruptive technologies. To examine genAI's potential disruptive impacts on TESOL, I will use the theory of disruptive innovation (Christensen, 1997) as a framework. This theory argues that new technologies lead to improvements in performance, but that there are different ways in which these improvements occur.

Where the innovation fits with current practice, improvements are incremental and follow an established trajectory. These innovations are termed sustaining innovations. Such sustaining innovations work within the existing educational system, and aim to enhance existing practice in a structured intentional way.

Where the innovation leads to major changes in practice, often combined with shifts in beliefs and values, the innovations are disruptive. Initially there may be no clear improvements in performance, but the innovation may be adopted because of convenience or price. Traditional methods, institutions and assumptions may come under threat, challenging existing beliefs and values.

It is in this possible replacement of values that disruption has the greatest long-term impacts. Taking the shift from film photography to digital photography as an example, as well as bankrupting Kodak and

enabling social media platforms like Instagram, digital photography changed individuals' and society's perceptions. Individuals take a massively greater number of photos, share them widely even with strangers, and, in some cases, view the world as if through a lens. From a social perspective, daily life has become visually documented, a culture of sharing personal experiences has emerged, and the credibility of photos is not taken as given. Currently in education, genAI is acting as a sustaining technology facilitating normal educational practices, yet genAI has substantial potential for disruptiveness shifting social values. If genAI does disrupt the educational status quo, the impacts are likely to be technosocial, changing the nature of education, prioritizing previously marginalized judgment criteria and values, and forcing teachers to take on different roles.

It should be noted that the possibility of genAI disrupting education is not necessarily based on the effectiveness of genAI. From the history of previous technological disruptions, some disruptive technologies have taken over from traditional alternatives because the innovations were cheaper or more convenient, even if they did not perform as well (Utterback & Acee, 2005). Studying English at home through a smartphone is cheaper and more convenient than travelling to a school to sit in a room with a paid teacher, and a key argument for using genAI in education is its cost effectiveness (Samala et al., 2024). Other disruptive technologies have come to the fore through marketing and public relations which allowed them to gain a critical mass in the market even though they were less effective than competitors. For example, in the 1970s and 1980s two competing formats of videotapes were being promoted. Betamax entered the marketplace first and had higher picture quality, but lost out to VHS which placed a greater emphasis on affordability and licensed more companies to produce recorders and movies. Even now, some language test providers boast of the quality of their AI evaluators with some implying that these are better than human markers. Whether such promotion of genAI changes markets remains to be seen. Finally, some innovations clearly underperform the existing alternatives on traditional measures, but have distinguishing features which create new markets, which themselves eventually disrupt the existing providers (Hopster, 2021). Whether and how this might happen with genAI and traditional education is difficult to predict, but by examining three cases of genAI use in education, each placed at a different point on the continuum from sustaining to disruptive, I hope to shed light on some possible future trajectories.

4 Three Case Studies

Most work on using genAI in TESOL has focused at the task level (such as identifying genre structures or editing writing). If genAI has the potential to be a disrupter, we need to focus on more global levels, such as the curriculum or teaching paradigm. Much of the work at global levels has been conducted in non-language educational disciplines and I will draw on these in the following case studies.

4.1 GenAI in the flipped classroom

There is a massive range of potential goals in TESOL. However, Cook (2009, p. 10) argues that these various goals fall into two broad categories: external goals which "relate to the students' use of language outside the classroom" and internal goals which "relate to the students' mental development as individuals".

The external goals are the traditional objectives of language teaching, such as grammar points, speech acts and specific language strategies such as scanning. These are the most visible objectives of TESOL, forming the basis for the lists of contents in coursebooks and tables of specifications for tests. The current educational climate, increasingly neoliberal in policy and instrumentalist in ideology (Ball, 2016), emphasizes the achievement of external goals as the overarching purpose of education (Kubota, 2011).

Language learning, however, is not simply the mechanical acquisition of specific objectives. Learning is social and affective as well as cognitive, and language learning provides opportunities for

broader personal development, such as increased ability for self-regulation, greater critical and cultural awareness, and enhanced interpersonal communication skills. These are the internal goals that are typically addressed through complex interaction in the classroom.

One educational approach that builds on the distinction between external and internal goals is the flipped classroom where basic knowledge is gained independently as homework, and in-class time is devoted to more discursive, interactive and critical activities (Akçayır & Akçayır, 2018). In the most commonly used flipped approach, the lecture components of lessons are moved online as videos which students view before the lesson. Reviews of the effects are generally positive for achieving the external goals and for providing greater opportunities to address the internal goals. However, producing videos is time-consuming for teachers, learning relies on student self-regulation, and the approach can become tedious and demotivating over time (Moran, 2018).

The external goals learned outside class in the flipped approach are also the objectives which most closely match the strengths of genAI as a tutor. GenAI can provide explanations, scaffold learning and generate tests effectively when the expected outcomes are clearly defined. For language education, these are the competence and skill objectives emphasized in an instrumentalist ideology. The match between out-of-class objectives in a flipped approach and objectives most amenable to genAI tutoring suggests the two can be usefully combined.

Such a combined approach has been used and evaluated in tertiary teaching of programming in Mexico and China. In both studies, an experimental setup was used to compare the effects of the standard flipped approach using videos and a flipped approach based around genAI (Huesca et al., 2024; Li, 2023). In both cases, the genAI-enhanced flipped approach outperformed the standard flipped approach with significantly improved performance, understanding, attitudes and motivation.

Where such an approach is possible, it appears that combining a flipped classroom approach with genAI is a highly beneficial application of genAI with the potential to promote learning of external goals while providing greater time to attend to internal goals. The use of genAI in flipped classrooms is a sustaining innovation building on and enhancing existing practices.

4.2 GenAI-aided active learning

Similar to the flipped classroom approach, the second set of cases also distinguishes between specific external goals addressed through genAI personalized learning and intangible internal goals focused on in the classroom. In genAI-aided active learning, however, genAI tools such as ChatGPT are used to support and promote discussion, collaboration and interaction in the classroom, in addition to being the main tool for outside-class learning of external goals as in the flipped classroom approach. For example, students can use genAI to research real-world issues when engaged in problem-solving tasks; genAI can guide discussions to be more critical; and data collection and analysis in case study discussions can be facilitated by genAI (Adiyono et al., 2025; Jayasinghe, 2024). Using genAI-aided active learning shifts teacher roles "from imparter of knowledge to stimulator of students' learning motivation", "from knowledge transmitters to technology users" and "from skills demonstrators to value guides" (Zhang & Lin, 2024).

The extent to which genAI-aided active learning sustains or disrupts depends on existing practices, attitudes and beliefs in local contexts. In art schools in China where humanistic ideologies dominate, the use of genAI-aided active learning develops existing practices without challenging underlying philosophies (Zhang & Lin, 2024). In test-centric state education systems such as Sri Lanka where didactic approaches are the norm, genAI-aided active learning can represent a major change (Jayasinghe, 2024). For example, students on a business course "felt a clear shift" in the nature of learning (p. 5). If combined with extensive overhauls of assessment practices, applying genAI-aided active learning in such contexts could be viewed as disruptive.

4.3 The teacherless classroom

A common fear in education since the advent of effective genAI has been the replacement of teachers (Chan & Tsi, 2024; Selwyn, 2019). While genAI has had very little impact on the education job market to date, there are estimates that 18% of jobs globally are under threat because of AI (Cerrulo, 2023), and the first indicators that teachers might not be exempt are becoming apparent.

At the forefront of using genAI as a tutor are the large nongovernmental education providers, such as Khan Academy (through Khanmigo) and Coursera, which are working on producing genAI tutors (Kshetri, 2023). Claims abound for tireless tutors who can engage in Socratic questioning, identify individual student's unique problems, and provide personalized solutions. For example, the Khanmigo website (https://www.khanmigo.ai/learners) states that it provides "engaging and on-topic tutoring … personalized tutoring … with limitless patience, it guides learners to find the answer themselves". Currently, however, they appear to be more appropriate as a support for rather than a replacement of teachers.

A potentially more serious challenge became a news story in August 2024. A private secondary school in London is offering a programme that "entirely replaces traditional teaching for the core curriculum in the classroom with AI-driven adaptive learning platforms" (Education Today, 2024). While the school claims that their goal is "to enhance learning, not replace teachers", the only courses with human teachers are art and sex education. To mitigate the potential harmful repercussions of a lack of social interaction, the school will hire learning coaches to monitor students and provide support if needed (Martins, 2024). The teacherless classroom clearly has potential for disruptiveness with massive potential impacts on the teaching profession, on the nature of education and how students learn, and on the institutional ecology of education.

5 GenAI in TESOL

The three case studies concern non-language education, but the same principles and practices could be applied in TESOL. In this section, I will examine the implications of the three approaches for TESOL.

5.1 GenAI as a sustaining enhancing innovation

The combination of genAI and flipped classrooms builds on and potentially enriches existing practice. Many of the reports of genAI use in TESOL view genAI as a sustaining enhancing innovation. Perhaps the most commonly reported use of genAI in TESOL is to provide feedback on student writing (e.g., Steiss et al., 2024; Teng, 2024; Wang et al., 2024). Especially if combined with teacher feedback, this approach would enhance existing practice. Integrating genAI into current practice as a sustaining enhancing innovation would therefore appear to be a win-win situation.

There are, however, reasons to be cautious. First, genAI is currently being applied in many contexts without an in-depth understanding of how it works and its strengths and weaknesses. Preparing for genAI-influenced future language education necessitates training in AI literacy and prompt engineering (Walter, 2024) and critical evaluation of the use of genAI in classrooms (Trust et al., 2023), but teacher training in genAI is lagging far behind its applications. Second, much of the genAI literature makes excessive claims for its benefits and shows a lack of concern for its weaknesses. For example, Chan and Tsi (2024) show how even the prosaic claims of genAI reducing teacher workload can be dubious and list 26 skills, qualities and experiences where human teachers outperform genAI. Third, the ethical issues of privacy, bias, surveillance and autonomy need to be addressed in any educational applications of genAI (Akgun & Greenhow, 2022).

Nevertheless, with appropriate attention paid to these cautions, integrating genAI into existing practice as a sustaining enhancing innovation shows substantial promise for benefitting TESOL.

5.2 GenAI as a sustaining challenging innovation

Shifting responsibility for the specific tangible objectives associated with external goals to genAI similarly shows substantial promise, since the approach expands the amount of time available for meaningful social interaction focusing on the internal goals of personal development. In progressive well-resourced contexts, as long as attention is paid to the cautions in using genAI, substantial benefits should accrue.

This approach, however, presents serious challenges for more traditional educational contexts (Toncelli & Kostka, 2024). In many contexts in low- and middle-income countries, "poor teaching practices and little to no learning inside the classroom" is the norm (Molina et al., 2018), often involving didactic education centered around mechanically completing the units in a coursebook. The majority of the content of most coursebooks consists of the specific objectives representing external goals that would be shifted to genAI in a genAI-aided active learning approach, leaving an unprepared teacher a void to fill in the classroom. For such a teacher, genAI-aided active learning would be more disruptive than sustaining, as the approach would entail changes in mindsets, teaching paradigms, classroom materials and activities, and assessment.

The substantive integration of genAI into teaching, however, will lead to shifts in teaching paradigms as some paradigms are more amenable to genAI integration than others. Most clearly relevant is the languaging curriculum defined as "learning to strategically make use of available tools and resources to successfully do things with English for real-world purposes" (Watson Todd & Rangsarittikun, 2022), perhaps the only paradigm that explicitly prioritizes the use of tools such as genAI in the teaching and learning process. As the use of genAI becomes more integral to education, it is likely that other new teaching paradigms will emerge and, as with the languaging curriculum, these will require shifts in teacher mindsets and roles. More practically, if a greater proportion of classroom time is to be devoted to internal goals, there is a clear need for materials, activities, assessment tasks and even whole coursebooks focusing on these goals.

5.3 The teacherless TESOL classroom

Completely replacing human teachers with genAI would clearly be a disruptive innovation, and many teachers would react with horror. It seems very unlikely to occur on a wide scale in TESOL, since there are many vital aspects of good quality education that genAI (at least, at present) cannot provide (Chan and Tsi, 2024). Indeed, there are some contexts where relying on genAI is impossible – the socialization of young children in kindergarten, and physical education – but, unfortunately, for TESOL genAI replacing teachers is not an impossibility.

Teachers and academics would agree that replacing teachers with genAI would be a massive mistake leading to poorer quality education. However, such views could be an irrelevance for real-world decision making regarding the role of genAI in TESOL for three reasons.

First, based on the theory of disruptive innovation, educational quality is not necessarily an important consideration in decision making. GenAI teaching is likely to be much cheaper than teacher-led education in most contexts, and economic factors may outweigh quality issues.

Second, where there is a potential for profits to be made, the discourse around education may be manipulated to favor business models, rather than educational models. For example, a discourse of educational crisis in Sweden led to an emphasis on the digitalization of education favoring edupreneurial companies providing hardware and software 'solutions' for Swedish schools (Ideland et al., 2021).

Third, the views of teachers and academics might not hold much weight in decision making about teacherless classrooms. Numerous news outlets shared the story of the teacherless classroom discussed above, and reading the comments on these stories is instructive. When shared on Sky News, primarily for a British audience, the majority of comments viewed the teacherless classroom as a dangerous aberration

(e.g., "Education without human interaction doesn't work and will damage social skills of people"), but a substantial minority (14%) of comments appeared in favor of replacing teachers with genAI (e.g., "I love this. Hope it will come to all schools"). More worryingly, when the story was shared on Thai news media, roughly half the comments favored teacherless classrooms (Sirita, 2024). While some comments addressed issues like the lack of humanity and job loss, 70% of comments directly addressing the issue of whether teachers should be replaced by genAI favored genAI, citing the advantages of AI (e.g., "Very good because it can design individual courses, with native-speaker standard curriculum worldwide") and the flaws of human teachers (e.g., "AI doesn't play favorites, doesn't hit children, isn't power-crazy, doesn't give crazy punishments") [quotations are translated from Thai]. In some contexts, the general public may be far more welcoming of teacherless classrooms than educationalists.

We are not yet at a point where teacherless classrooms become a reality in mainstream TESOL, but the TESOL community has a responsibility to be proactive in creating discourses arguing for the benefits of human teachers.

6 Preparing for GenAI-influenced Future Language Education

Bearman et al. (2023) characterize the discourse surrounding genAI in education as either dystopian where AI-forced change is resisted or utopian where preparation for positive adaptations are made. GenAI as a sustaining innovation in TESOL has the potential to be utopian. For this to happen, however, several issues need to be addressed:

- Training in AI literacy, prompt engineering and critical evaluation of the genAI use in education needs to be provided.
- Ethical issues in genAI use need to be addressed.
- Teaching paradigms focusing on the internal goals of personal development need to be developed.
- Coursebooks, materials and activities focusing on internal goals need to be designed and shared.

GenAI as a replacement for teachers is likely to be dystopian and needs to be pre-empted by the TESOL community generating dominant discourses of humanity in education. Effectively managing AI-induced innovation raises the likelihood of a more utopian future language education combining the best of teachers and genAI.

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Richard Watson Todd is Associate Dean for Research at the School of Liberal Arts, King Mongkut's University of Technology Thonburi. He has a PhD from the University of Liverpool and is the author of numerous articles, including publications in *Applied Linguistics, ELT Journal* and *System*, and several monographs including Discourse Topics (2016).