



Artificial intelligence in the L2 classroom: Implications and challenges on ethics and equity in higher education: A 21st century Pandora's box

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ABSTRACT

The purpose of this research was to investigate attitudes of both students and teachers concerning Artificial Intelligence (AI) tools in the L2 classroom. The study was a descriptive, qualitative, mixedmethods case study whose data were taken from a purposive, convenient sample at a private, English-speaking university during the Summer Semester 2023 in Beirut, Lebanon. Data collection primarily involved an online survey on Google forms which was given to a sample of 49 students taking a research-based English 202 course of which 46 were completed. Afterwards, six English teachers and six students were chosen based on their voluntary will to participate in individual interviews for the former and semi-structured focus group interviews for the latter. The findings revealed that approximately 85% of students did indeed use AI unethically to get ideas for their assignments, assist them in their projects' "blue-prints" or do their assignments/projects altogether. The findings also revealed that a "love/hate" relationship seemed to dictate students' relationships with AI, where students did indeed make use of AI but were distrusting of it for privacy and equity concerns. Finally, findings also revealed that most of the interviewed instructors' readiness to undergo training for AI was more to monitor students' potential misuse of it. The article purposes a suggestive revamping of course learning objectives due to students' inclinations to misuse AI to do their coursework with 89.4% of students willing to use AI to complete their coursework should university punitive measures be removed; furthermore, the article equally proposes future research investigating the impact and use of AI in the higher educational classroom on student performance and that it be used with a "grain of salt" as it may unleash a Pandora's box of future generations graduating without the necessary know-how in delicate professions of medicine, nursing, engineering, architecture among others.

1. Introduction

In a world where technology is ubiquitous and dynamic, the advancements of information processing have brought about the nascence of artificial intelligence (AI), which are software programs designed to simulate human cognitive processes such as decision-making, inferencing analysis (Font de la Valle & Araya, 2023), adapting, and synthesizing information along with self-correcting software whose functionality includes judging (Popenici & Kerr, 2017), remembering, understanding (Xiaohong & Yansheng, 2021), planning, and calculating in addition to handling problematic tasks (Zhang & Chen, 2021). Russell and Norvig (2010) define AI as any and every facet of learning or intelligence that can be described in detail and fed as input to a machine that can be

simulated, while Acemoglu and Restrepo (2019) define AI as the study and development of machine-like, software algorithms that simulate human intelligence by interacting with their environment. Specifically, AI's prevalence has permeated people's lives extensively, starting from smartphones to manufacturing, transportation, architecture, design, tv and film industry as well as the medical sector (Sharadagh & Sa'adi, 2022).

Moreover, generative AI, which refers to the ability to create new data from (past) repeated patterns (Ray, 2023) as well as the ability of AI to simulate human cognitive abilities has piqued the interest of scholars and educators alike, particularly in the field of higher education as the latter has often been inherently invested in the latest technologies. From the adoption of calculators and computers to spell-check programs as

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well as assistive technologies such as text-to-speech, speech-to-text, zoom capacities, and predictive texts besides search engines, these technologies were all designed to assist students with disabilities (Popenici & Kerr, 2017) in the educational sector both at school and higher education. Subsequently, AI tools developed into commonplace applications and became embedded into tools such as smartphones and computers, laptops, IPADS, such as SIRI, ALEXA and Google Maps (Hwang et al., 2020). Consequently, dynamic, day-to-day changes of AI have developed and integrated in educational settings with the aim of enhancing and supporting students' learning experiences through more upgraded tools in the form of AI-integrated search engines. Tools such as Bing, Bard, Microsoft Cortana, Assistant Poe and Chatbot GPT, that assist students in their research (Viktorivna et al., 2022) in different campuses worldwide (Font de la Valle & Araya, 2023; Reiner et al., 2021) in the educational sector are referred to Artificial Intelligence in Education (AIED).

2. Theoretical background

2.1. The roles of AIED

Thus, in the educational sector, there are four roles adopted by AI tools such as serving as a tutor, a tutee, a learning tool/partner or policy-making advisor (Hwang et al., 2020).

- 1) AI as a tutor: These are largely the most common applications prevalent in the field of education. Intelligent tools/adaptive tutoring systems have become personalized and are programmed to cater to various students' learning needs. Such tools are thought to enhance student performance and promote the application and achievement of learning objectives (Sharadagh & Sa'adi, 2022), and boast of personalized, efficient, and rapid learning facilitated using apps and mobile devices (Yunje, 2021) particularly in the language classroom. Here, students can practice learning needed skills tailored both to their learning objectives and course needs (Hwang et al., 2022). Other examples of such intelligent systems include Cognitive Tutors geared to offer support in mathematics and sciences as well as Auto Tutor which is a dialogue-based tutor offering support in the fields of physics, computer literacy and critical thinking (Graessner et al., 2004 as cited by Hwang et al., 2020).
- 2) AI as an Intelligent Learning Tool/Partner: This AI tool allows learners to amalgamate and analyze data facilitating students' focus on skills involving critical thinking, inference and problem solving as opposed to other lower-level thinking skills on the Bloom's Taxonomy scale such as editing and calculating (Hwang et al., 2020). Examples of such AI tools are Mindtools in the form of concept mapping tools that allow students to put concepts together, assimilate and organize knowledge as well as knowledge graphs that allow tutors to establish causal relationships between different concepts and variables.
- 3) Policy-making advisor: These tools in AI are geared towards supporting students in the educational sector by having the respective policy makers observe and understand the trending problems at the micro-and macro levels among students and consequently evaluating the most appropriate policies to offer support (Hwang et al., 2022; Font de la Valle & Araya, 2023).

2.2. Advantages of using AI in education

In addition, the corpus of literature surrounding AIED seems to suggest that a great deal of benefits is reaped. For one, AI is thought to facilitate providing personalized learning outcomes in the classroom which likely both augment and enhance student learning (Liang et al., 2022; Hwang et al., 2020) by collecting students' characteristics, analyzing them, pinpointing their strengths and weaknesses, and then adjusting the lessons according to their learning needs and abilities. In

terms of personalization vis a vis students' progress, AI can also be made to tailor to students' cognitive abilities and levels such that they can create learning activities given the students' abilities, track their progress and create assessments, tests and evaluations based on the fields and instructions provided. Font de la Valle and Araya (2023) posit that applications such as Rosetta Stone allow for interactive learning through lessons, exercises and quizzes in over 30 languages.

Moreover, AI learning systems facilitate studying at students' convenience, receiving personalized feedback and assistance as well as guidance throughout their learning without the intervention of their instructors (Sharadagh & Sa'adi, 2022). In the language classrooms, AI provides students with more ease of learning, specifically as concerns communication since they practice their language skills, repeat tasks (such as specific expressions or idiomatic phrases) and ask a teacher bot questions they otherwise would not be able to or would be shy/hesitant vis a vis their actual teachers (Gao, 2021). Sharadagh and Sa'di (2022) also suggest that certain AI tools in the form of teacher bots can collect large amounts of student information, analyze it, detect and diagnose students' problems, pointing these out to teachers and suggesting recommendations.

Furthermore, Li (2017) posits that AI tools can be used to provide a platform for a personalized language learning environment, while Yong (2020) suggests that AI tools can even aid instructors check attendance using facial recognition software, which is a vantage point as it allows teachers not only to maintain security on campus by checking students' attendance, but also to reduce routine tasks, allowing for more efficient classroom management of activities and teaching. Moreover, Hou (2021) posits that AI technologies also allow for the correcting of pronunciation, using AI applications such as ELSA Speak (Font de la Valle & Araya, 2023), which is short form for English Language Speaking Assistant, to enhance non-native speakers' English pronunciation using voice recognition technology, in addition to other applications that support students in the evaluation of homework and assignments offering personalized feedback. Moreover, there are also automatic corrections of compositions which include sentence structure, lexical items and collocations provided by AI (Yong, 2020). Furthermore, in the field of oral training, AI Chatbots, which can be used as both tutors and personalized learning tool/partners (Sharadagh & Sa'adi, 2022) interact with the learner, pose questions, and respond to the students' queries (Li, 2017). AI Chatbots can also be very beneficial teaching tools as they enhance students' autonomous learning while at the same time alleviating anxiety-related assignments (Sharadagh & Sa'adi, 2022). Then, there is the influence of AI in machine translation which has allowed for great leaps in the teaching of languages such as English (Yong, 2022), as well as motivating students and prepping them for language learning. To this effect, Sharadagh and Sa'di (2022) posit that AI tools in translation account for fast and accurate translation thus aiding students in their studies as well as communicating and integrating with other students from other cultures, such as Google Translate and Glossika (Font de la Valle & Araya, 2023). Moreover, as concerns scientific fields such as nursing and medicine, AI can be used to train people living in remote areas and with very little medical background on paramedics and how to deal with first-aid situations, for example (Tourni et al., 2023).

The advantages of and benefits of AI tools are significant and have been rated by the existing corpus of literature as state-of-the-art (Holmes & Tuomi, 2022); however, the available research at hand does indicate that AI as learning tools are not without their limitations on the one hand and their ethical challenges on the other.

2.3. Ethical challenges of AI: credibility, university accountability and students

For starters, in terms of AI in the learning environment, the University of Buckingham interim report (2021) cautions introducing any form of AI into learning environments without adequate and comprehensive measures to maintain a systemic "checks and balances". The

report goes on to warn of various ethical breaches that are likely to -or have already-occurred within the educational sector. One ethical breach involves the erosion of student motivation to learn as well as their ability to tap into higher order critical thinking capacities and independent thought (Viktorivna et al., 2022; Aiken & Epstein, 2000) through the continued use of limited AI tools, i.e. those that do not cater to developing students' higher order thinking skills, such as Chat GPT as the work is done for the student, rendering little effort or creativity on their part. Wogu et al. (2018) presented research findings suggesting that students had a preference of learning through traditional settings with human teachers- as there was more engagement and integrated learning as opposed to learning environments provided by AI or even teacher bots. Furthermore, in a study by Viktorivna et al. (2022), students' creativity is both stunted and hindered by some AI language learning tools. Moreover, Aiken and Epstein (2000) claim that intelligent systems can induce what they refer to as "intellectual laziness" among students hindering them from taking rational decisions about matters due to their inability to focus or employ higher order thinking. Moreover, Wogu et al. (2018) take matters one step further by suggesting that the continued use of AI tools may very well lead to students' inability to study on their own as students have become accustomed to AI embedded search engines at the tap of their fingertips or even AI generated responses/essays/homework. Sweeney (2023) advocates the afore-mentioned perspective by arguing that academic dishonesty, defined as a form of academic misconduct inducing dishonesty in work, exams, assignments with the purpose of obtaining a more desirable outcome, has often been the result of students reverting to AI technologies in the higher educational classroom to complete graded assignments and work. Moreover, Choi et al. (2023) also posit that AI tools such as Chatbot GPT, Bard, Quillbot, Microsoft Cortana, Assistant Poe and Grammarly promote plagiarism and cheating where students resort to them to produce grammatically accurate, mass-generated content from Big Data companies. Furthermore, the literature also suggests that AI tools use algorithms coupled with predictive texts to generate writing which may or may not be credible and based on real data. This is because data from huge corpora such as Google and Reddit are fed into large language models (LLM), which are specialized forms of AI algorithms trained on large sets of data that enable these algorithms to later generate texts (Gartner, 2023); in turn, they analyze information as well as other web-based platforms, blogs as well as product reviews (Khuwaja et al., 2023) and use the information there-through patterned, repeated algorithms to synthesize information which may neither be accurate nor true (Choi et al., 2023; Sweeney, 2023). Equally alarming is that students resorting to such writing mills are hardly cognizant that the generated content they are submitting may harbor very little credibility (Choi et al., 2023).

Consequently, as students' reverting to such AI mills to produce written work becomes normalized, an environment may likely be born where students can hardly distinguish between neither what is acceptable nor credible and what is not in the Higher Educational context (Sweeney, 2023). Furthermore, Eke (2023) also contends that AI tools and reverting to essay mills distorts students' perceptions of what education, and particularly university life -is all about, eroding students' motivation to learn as well as academic enquiry.

What's more, and further promoting intellectual laziness are "pathfinding" algorithms, such as "Control + Shift + F" (quite similar to GPS "pathfinding" AI, as well as PDF readers' Optical Character Recognition (OCR) which identify text/characters as images (Eke, 2023). Subsequently, to solve comprehension exams, for example, on PDF readers, students plot in the keywords (which they take from the question on a reading comprehension exam) and plug them into the PDF reader's search bar, where the latter either employs "OCR" or "Control + Shift + F". As such, with such shortcuts facilitated by these pathfinding algorithms, intellectual laziness is likely to become paramount-leading to a continuously dissipating reading class (Dakakni & Safa, 2023). In turn and with time, this is likely to open a Pandora's box with the launching

forth of a generation of graduates ill-equipped to handle the working requirements of the real world from majors as sensitively precise as nursing graduates, doctors to engineers, nutrition majors as well as English and Business, let alone a class of graduates who barely possess the most basic of literacy skills. As students revert to AI and writing mills to submit their assignments, this behavior contradicts drastically with both credibility and the standards of Higher Educational Institutions as it undermines core values such as honesty, trust in institutional fairness vis a vis assessments, along with responsibility and courage (Eke, 2023).

2.4. Tech-lords AI and the ethics of information manipulation

Noteworthy of mention is that with AI permeating people's lives, both personal and professional, more and more reliance on this intelligent technology is taking place. As such, the danger lies therein. It is crucial to remember that AI functions through algorithms which are fed into software programs. Hence, critical thinking and decision making, once specific to human beings' minds can now be operationalized by repeated algorithms. Consequently, a question that poses itself is *Who controls the dissemination of algorithms?* Popenici and Kerr (2017) suggest the looming danger of having tech-lords in control of these algorithms, where and when they get sent and to whom. Thus, this raises an ethical issue concerning the manipulation and dissemination of algorithms by powerful tech-lords who own such colossal conglomerates such as Microsoft, Open AI, and Google and can decide what algorithms to launch, to whom, when and where at the click of a button. Consequently, if transparency vis a vis the use and dissemination of algorithms is not maintained and guaranteed, higher education institutions, whose primary functionality is to promote freedom of thought and free enquiry, will erode and disappear giving birth instead to institutions where knowledge and information are likely to be controlled, distorted or even suppressed by algorithm-based decision-making manipulated by a select few (Popenici & Kerr, 2017).

2.5. Human interaction and AI: societal malaise

Another threat that AI technology seems to present to students and teachers alike in the educational landscape is the (lack) of societal well-being offered through personalized, human interaction (University of Buckingham Interim Report, 2021). It is a well-noted possibility that AI systems may very well weaken human interaction leading to a worsening of interpersonal skills, possibly rendering youth as "impotent at the individual level" (Aiken & Epstein, 2000, p. 170). In fact, this is already taking place in different parts of the world. Tao et al. (2019) in their research refer to a movement in Japan called "Hikikomori" where young people form groups and decide not to leave their homes and instead "interact" with others through virtual video games and digital interfaces such as computers, laptops, or smartphones. Alarming enough, Tao et al. (2019) suggest that these may be signs of a rising ethical dilemma concerning lack of human interaction. Moreover, Wogu et al. (2018) support this argument by contending that AI tools are likely to distort the teacher-student relationship with the introduction of teacher bots and other AI based tools in the educational space. Aiken and Epstein (2000) in their previous research suggested that the likelihood of alienation is bound to occur as students interact with mechanized teacher bots. Furthermore, Wogu et al. (2018) support this argument by referring to Marx's theory of alienation as workers interact with assembly line machines, they are likely to become alienated from their human nature. As such, as students continue to interact with teacher bots and other forms of AI tools, they too are likely to lose touch with their humanistic nature. In line with this argument, Tao et al. (2019) contend that there exists what they refer to as "The Distancing Effect", defined by the feeling of disassociation and disconnectedness students experience as they are separated or disassociated from their object of study/work in time and space through their use of AI technology in particular.

2.6. Ethics, privacy and AI

What's more, and according to the University of Buckingham Interim Report (2021), privacy is considered to be a right directly affected by AI systems and requires clear protocols that promote prudent data governance protecting the quality of data as well as its integrity. Viktorivna et al. (2022) foresee the likelihood of cyberattacks on personalized accounts due to the prevalence and ubiquitous use of AI tools as the latter requires personalized accounts for their use. To this effect, Tao et al. (2019) caution against the ubiquitous use of AI promoting continued surveillance through face identification programs that identify people, place, context, and time all stored in data banks. Moreover, data related to learner's performance, weaknesses, vulnerabilities, biometric information or even their behavioral habits could be used to manipulate, exploit, or oppress learners (University of Buckingham Interim Report, 2021), or worse still, learners can lose control over who has access to their personal information as data banks can be hacked and information can be exploited or used unethically without learners' consent nor volition.

2.7. Equity challenges and AI: students, skills, algorithmic bias and inequity rifts

As concerns AI and equity, a significant corpus of literature has associated numerous misgivings involved. One concern revolves around the possibility that algorithmic bias is indeed a viable possibility resulting in unfair discriminatory measures taken against students coming from underprivileged socio-economic communities/ethnic minorities or at-risk students (University of Buckingham Interim Report, 2021). Predictive analytics tools, which are AI based machine learning systems, coupled with data mining and statistics modeling can for example predict and underscore the likelihood of at-risk students or even student dropouts coming from lower socio-economic backgrounds and thus take measures against them (Zhang, 2020) leaving them at an inequitable disadvantage. Font de la Valle and Araya (2023) equally argue that AI systems are likely to be prone to algorithmic biases leading to an amplification of the existing disparities, differentials, and gaps in performance, particularly language performance, in educational settings. In fact, Thind (2023) argues that AI likely reasserts white supremacy, which she defines as a set of socio-political/economic belief systems where the overwhelming amount of power and control goes predominantly to white males. Consequently, Thind (2023) equally posits that since technology is hardly ever neutral, it likely reflects anthropomorphized traits, ideals and values of those molding the algorithms. Consider, for example, Apple's Siri and Amazon's Alexa, as well as other AI names such as Assistant Poe and Cortana. All previously mentioned names portray AI as White. Similarly, Thind (2023) also adds that the respective diction, elocution, accent, and articulation are for the most part in "proper, accent free English" (p. 12). Finally, Thind (2023) critically suggests that algorithmic biases, which she defines as prejudices that developers of algorithms may engage consciously or subconsciously while developing AI in Canada alone are predominantly written by 70% whites and 80% who identify as males. Consequently, this likely puts students that come from marginalized ethnic communities at a risk of experiencing bias and inequity and feeling targeted.

2.8. AI and the digital divide

In addition, AI systems that lack transparency in showcasing the decision-making process through algorithmic data labelling may further exacerbate inequities, specifically in courses where an incumbent or learner is denied a place/seat and has no means of disclosure due to an opaque administrative system (University of Buckingham Interim Report, 2021). Moreover, research presented by Lutz (2019) argues that AI amplifies inequity in the educational classroom through what he refers to as a digital divide. In the first level, Lutz (2019) claims that the

first divide occurs through lack of accessibility to the internet. Where Van Dijk (2006) points out that digital divide is defined as the disparity between students who do and don't have access to new forms of information technology (as cited by Lutz, 2019) meanwhile, Font de la Valle and Araya (2023) as well as Choi et al. (2023) argue that AI creates disparities and inequalities among learning outcomes, objectives and opportunities among those students who have access to AI enhanced technologies and those students who lack access to such tools and resources leading to an unfair advantage in the overall learning experience.

Moreover, another rift brought about by AI augmenting inequity among students is a branching out from the first digital divide. As students who have continued accessibility to the internet and new emerging technologies acquire more and more skills with their daily exposure and usage to AI tools, this creates an ever-increasing gap between them and their counterparts who neither have the ease of access to new technologies nor are able to acquire the same skills within a similar time frame (Lutz, 2019; Park et al., 2022). Consequently, a second digital divide occurs through the acquired skills and their respective application in daily activities, be they professional, personal, or academic. Where Park et al. (2022) refer to this acquisition of digital skills as "digital consumption" specific to certain social groups who understand the access and use of AI technologies as well as their risks as opposed to others who don't, Lutz (2019) suggests that in such cases, AI technologies not only create rifts and inequalities in terms of skillsets required in the operationalizing and use of AI technologies, but also along socio-economic groups. Lutz (2019) further elaborates that such technologies favor people who have an economic advantage by exposing users to high-end technologies and the necessary skillsets required to operate them. He posits that groups who are at an economic advantage and can operate hi-tech equipment are more knowledgeable in by-passing algorithmic surveillance and control due to their habitual use of AI technologies as they have acquired the needed skills to do so, setting them at a higher advantage than their less able counterparts both at the economic and technological level. In fact, Park et al. (2022) illustrate the above-mentioned finding by citing how users with lower socio-economic strata tended to practice misjudgment and overlooked privacy risks as they interacted with AI powered tools and were more prone to surveillance and racial/ethnic profiling. Lutz (2019) further ascertains that disadvantaged populations are likely to suffer most from large-scale surveillance based on their interactions digitally, citing African Americans, Hispanics, Arabs and women as examples.

To this effect, Wogu et al. (2018) equally argue that AI based learning systems are very likely to "breed" inequality among different learners as these very systems provide customized learning to their users in every group or social class. Consequently, as learning systems powered by AI cater to students' personalized needs and levels, and as these systems tailor course work according to the mental capacities of the students, they indirectly create varying levels of standardization for each student/class/group. In this manner, such AI systems not only distort the standardization of the course or program, but they also create even steeper inequalities between "weaker" and "stronger" students leaving students with the lesser aptitude at a disadvantage in terms of the minimal skills repertoire required to meet the demands of the labor market. Such inequality could be reduced if the AI tools help low achievers to advance and leverage their skills by tracking their progress and feeding them with personalized instructions at a high level of thinking. Moreover, research offered by Lutz (2019) claims that there exists yet a third digital divide or inequity which he argues is an off shoot from the first and second digital divides and is propelled by AI technologies. In fact, Van Dijk (2006) argues that the third level of digital divide is translated by the individual's capacity to put to use the acquired skills and knowledge rendered when interacting with technology and AI systems which render competitive advantages, favorable gains professionally, socially, culturally or educationally (as cited by Lutz, 2019). This in turn, is likely to exacerbate already existing educational,

professional, and social rifts and inequalities (Lutz, 2019).

2.9. Socio-economic displacement and AI

Moreover, a report from Stanford University (2016, as cited by Tao et al., 2019) suggested that AI was likely to displace a spectrum of jobs such as transportation, health care, education, survey researchers, accounting, journalism, clerical jobs, human resources, architecture, graphic design, tv and film, public relations, and advertising, as well as translation (Georjieff & Hye, 2022), while Cabitza et al. (2021) foresee human-to-machine displacement as imminent, specifically as concerns repetitive, tedious or even dangerous and error-prone tasks. Furthermore, and though-in essence-education is thought to be a human undertaking, Tao et al. (2019) posit that the dynamic development of AI will blur the lines, specifically in the educational classroom, between AI intelligent teaching systems and individual learning, Shu and Xu (2022) advocate the fortes of AI systems in education as they claim AI technologies promote enhanced learning ability of students as well as increasing teachers' classroom control. In addition, a large volume of literature seemingly prophecies the replacement of teachers with AI assistants, cyborgs, and teacher bots (Cabitza et al., 2021; Hwang et al., 2020; Popenici & Kerr, 2017; Shu & Xu, 2022) within a proposed time frame of ten years. In fact, Popenici and Kerr (2017) posit that not only will teacher bots and cyborgs allow for economies of scale enhancing organizational efficiency, but that the 'outsourcing' of an academic workforce comprised of teacher bots and cyborgs is more than likely and has already begun, revealing that Australian universities are in an almost "aggressive pursuit" of cutting down on costs by reducing expensive academic teaching staff.

Acemoglu and Restrepo (2019) equally posit that the current trend of investment is going into automated AI as opposed to augmented AI. They posit that the former is defined as AI that displaces jobs and not-so-skilled laborers. Thus, the likelihood of automated AI being more commonly adopted seems to be imminent, promising the pushing down wages and laborers into lower echelons of the social class without necessarily raising productivity. On-the-other-hand, augmented AI is when intelligent technology is used alongside human labor augmenting it and being augmented/guided by it; that is, laborers are not replaced by AI technologies, rather they direct and guide the intelligent systems to complete tasks. This requires retraining and reskilling the workers to use AI technology in order to enhance productivity, but in the long run, as Acemoglu and Restrepo (2019) underscore the long-term profitability of using augmented AI. Another point of attraction for automated AI is that it is practically exempted from tax laws (as federal tax laws favor machines or plants) since they provide economies of scale and cost cutting; on the other hand, federal tax laws heavily levy human labor and for augmentation AI to work. Thus, where AI is centralized among high tech companies such as Facebook, IBM, Open AI, DeepMind Microsoft, Google, and Alibaba, warranted concern is becoming more palpable as the future of tech with its global ramifications lies in the hands of a select few, forebodingly suggestive of an oligarchic class running the reigns of the world in the future to come. Consequently, and in terms of the labor force at the local and global level, this may likely yield stagnating labor demands, lowering productivity and growth, raising inequality and inciting a declining labor share in the overall global GDP as cheap labor from developing countries gets replaced by automated machines. Hence, deeper economic, political rifts are the likely outcome-not just between the rich and poor, high-tech cities and laid-back villages, but also between developed and developing countries where the latter's cheap labor (and likely only source of income) gets displaced.

In truth, AI may very well be an ingenious creation, perhaps even state-of-the-art crowning the 21st century's innovations; however, it may equally reveal itself to be a Pandora's box leading to global socio-economic demise as jobs deemed to be redundant, that is, replaceable by AI technology, lead to the annihilation of white-collar as well as

assembly-line jobs. If left unmonitored, AI technology may change the world in ways similar that of the Industrial Revolution, resulting in global migrations, return to mercantile artisans and possible destitution of communities that have compromised skills, education and means of survival.

3. Materials and methods

The research at hand revolves around the following research questions:

- 1) To what extent do students resort to AI technologies?
- 2) What are the reasons for students' use of AI technologies?
- 3) What are the existing attitudes of English language instructors towards AI technology?
- 4) To what extent are students aware of the possible harmful impact of using AI technology?

The study at hand was a descriptive, qualitative, mixed-methods case study whose data was taken from a purposive, convenient sample at a private, English-speaking university during the Summer Semester 2023 in Beirut, Lebanon. Data collection primarily involved an online survey on Google forms which was distributed through a link to a sample of 50 students taking a research-based English 202 course, of which 46 online surveys were completed. The online survey comprised of sixteen Likert type scale questions. The sample was taken from the researcher's workplace for convenience purposes. Students were encouraged to fill out the survey voluntarily in return for bonus points if they completed the survey successfully. In addition to the online survey, the researcher held semi-structured focus group interviews with six instructors as well as six students based on their voluntary willingness to. Naturally, instructors' and students' names remained anonymous and were codified for privacy concerns. Descriptive data was then collected from both the online survey powered by Google Forms, as well as the semi-structured focus group interviews students as well as the one-to-one interviews for instructors.

4. Results

The study at hand seemed to render a plethora of findings that were rich and controversial at the same time. Tables 1 and 2 summarize some of the findings.

4.1. Descriptive findings from the online survey

In line with the first research question, "To what extent do students resort to AI technologies?", which was also item number seven on the online survey, approximately 85.2% of the respondents answered that they resorted to using AI technologies, primarily utilizing Bard and Quillbot at 38% and Chatbot GPT in second place at 25.6%. Other applications such as Grammarly were also used but seemed to be relatively less popular compared to the first two at 21.3%. Another finding that appeared significant was that students who received aided funding -be it through scholarships or financial aid - were more likely to be motivated to use AI than their self-funded counterparts. This finding appears through the significant number of students both on scholarships and financial aid, 35/46 or 76% who view AI positively and find that it can be very enriching academically. Perhaps there may be a relationship between self-funded students and the urgency of maintaining high marks through AI; this finding is inconclusive, however, given the insignificant size of the self-funded students, 4/46 or 8%. (See Table 2 for summaries of students' responses).

In line with the second research question: "What are the reasons for students' use of AI technologies?" which was also embedded in the online survey as items number nine and ten, respectively: "Why do you like to use AI tools", and "What do you use AI for?", 46.8 % of the

Table 1
Instructors' attitudes towards AI.

Items	AI tailored to needs	How is AI used by students	AI and the L2 classroom	AI to evaluate student papers	AI and Teacher Training
	<p>4/6 instructors believe that AI can not offer personalized learning needs to students as they are incapable of such an assessment (too generic, non-specific and no emotional feedback)</p> <p>2/6 instructors advocate that the use of AI can be tailored to students' learning needs</p>	<p>4/6 instructors claim that AI is likely to be misused for cheating and plagiarism by students</p> <p>2/6 instructors argue that AI is here to stay and that curricular objectives need to be overhauled and assessments should be restructured</p>	<p>1/6 instructors believe the use of AI for some creative ideas but language-wise can be harmful; makes students lazy</p> <p>2/6 instructors suggest the use of AI with a grain of salt as it kills creativity and original work</p> <p>1/6 instructor argues that the use of AI is ineffective</p> <p>2/6 instructors are open to AI with overhaul of learning objectives</p>	<p>1/6 instructors say can misguide students who are not familiar with language rules</p> <p>4/6 instructors believe the use of AI in evaluation in higher ed is ineffective since non-specific</p> <p>1/6 instructors are open to use of AI for evaluation in addition to instructor's own evaluation</p>	<p>1/6 said training for AI is a waste of time if students would use it to cheat</p> <p>3/6 instructors would incorporate teacher training for "policing" purposes</p> <p>2/6 instructors invited use of AI with complete overhauling of learning objectives</p>

Table 2
Summary of responses-student AI.

Items/	Types of AI Used	Purpose of AI Use	AI and Privacy	AI and Equity	Attitudes towards AI
	<p>6/6 students use Chat GPT</p> <p>2/6 Use Quillbot in addition to Chat GPT</p>	<p>5/6 students use AI as an "assistant" for their assignments/get ideas for their projects/assignments instead of brainstorming</p> <p>-Others' engagement with AI is more unethical→as they use AI to do their assignment for them and copy/paste it and submit.</p> <p>If no penalties were implemented for AI, more students would use it</p> <p>Still other students use AI to "rig" the system: AI presents them with the answer-and they paraphrase the responses in their own words to avoid detection</p> <p>1/6 uses it to chat with the Chat GPT to mimic written language style and memorize phrases and expressions</p>	<p>3/6 Students are concerned about privacy issues of AI. As it amasses and stores huge amounts of data as well as tracking of their personal preferences.</p> <p>3/6 are not concerned as their main concern likely lies in the immediate outcomes of getting grades with AI in the short run and do not relate to the harmful effects of AI</p>	<p>3/6 Students are concerned/ aware of equity disparities among people/loss of jobs instigated by AI</p> <p>2/6 are not concerned with equity disparities among people/ loss of jobs instigated by AI</p> <p>1/6 was concerned about AI's ability to feel, this may render it capable of doing things on its own-likely destructive/ aggressive behaviors.</p>	<p>4/6 students believe that AI is beneficial regardless of its consequences since it aids in assignments, gives them ideas, and is fast</p> <p>2/6 believe it is useless since it is stealing parents' money when paying their children's tuition/ sad that people are relying on AI</p> <p>Students indicated that AI is preventing deep thinking, researching and searching for knowledge and self-betterment</p> <p>They also said that AI is killing creativity</p> <p>-One student said AI makes people feel "careless" about information-as its easily available rather than research</p>

students answered that they tended to favor AI as it supported them with languages and added more style and technique to their writing, while 23.4% said they used AI to help give them ideas for their work. Finally, 8.5% of the students said they used AI tools to help them maintain high grades, perhaps through getting creative ideas or through help with their assignments or essays. Illustrated in Table 2, this was equally in line with responses from some of the student interviews, where students claimed that:

" And I like to interact with her AI in order to mimic the way she AI writes so that I can use it when I write. Like I would have more professional language" (SIII)

Furthermore, other students use AI for their homework or projects, at 23.4%, where students reported that:

"So it makes working on projects easier. You can get ideas, you know?... and then do the rest yourself? Think of an AI as an appetizer ..." (SI)

"I use AI to give me structure, like the blue-print for my work" (SIV)

"I ask AI and it gives me a good idea. It's convenient and fast. I finish my assignments in no time" (SV)

"I ask AI about a certain topic and then AI gives me the information" (SVI)

In line with the third research question concerning AI and instructors: "What are the existing attitudes of English language

instructors towards AI technology?" Of the instructors that were interviewed, approximately 67% expressed feelings of distrust toward AI as they felt it prodded students to plagiarize, which they found distasteful. In addition, when asked about how they felt about being trained on the usage of AI technology, approximately 83% said they wouldn't mind getting training if only for "policing" purposes and keeping a system of "checks and balances" on students' tendencies to plagiarize. One instructor argued that as AI was inciting students to be "lazy" and "not think for themselves" this instructor had "no intention of wasting time on training, even". (See Table 1 for summaries of instructors' responses).

Moreover, in line with research question number four: "To what extent are students aware of the possible harmful impact of using AI technology?," the findings equally suggest that students seem to exhibit a "love/hate" relationship with AI; that is, they find AI beneficial and serviceable to them, which can be seen in item 11: "What is your opinion on AI?" where 70.2% found it beneficial. However, students also seem to exhibit distrust when it comes to dealing with AI, This can be seen from the response rate for items 13, 14, and 15, where in question 13 for example, students were asked, "Would you prefer to be taught using AI teacher bots or human teachers?"; in turn, 100% of the respondents answered that they would not prefer to have a bot teach them and replace a human teacher. This is suggestive that although machines may render services to students, students still prefer to interact with human teachers. Similarly, item 14 reasserts seeming distrust in AI services where 85.1% of students claim that "When applying for a job among hundreds of applicants, I would prefer that the screening and selection

process be conducted by humans to avoid unfairness and error. This likely suggests that students are indeed aware of a dark side to AI as concerns bias and inequity. Similarly, in item 15, "Do you think humanity is likely to worry about AI taking over jobs?", around 80.9% agreed, indicating that AI had garnered a sense of malaise and distrust on the part of students, thus rendering an average overall 84.05% score of students' negative attitudes towards AI. In addition, when asked what they thought about AI and equity issues in terms of machines replacing jobs, some students' responses seemed to reflect a certain amount of neutrality:

"I have no concerns about AI replacing people. Someone needs to manage these machines, right? Those are new jobs for you there" (SIV)

"No, I don't have any concerns about AI replacing people or equity issues. I feel technology creates jobs in another form for people" (SVI)

Where other students seemed undecided about how they felt about AI although aware that it may be problematic in the future:

"50 -50. I worry that AI will substitute human beings, but I can't deny the fact that it is very helpful" (SI)

-Other students seemed to be aware of a growing problem between AI and equity issues:

"I am against AI taking over jobs. Honestly I am afraid of this happening in the future" (SV)

"I mean if you have access to AI-you are dividing yourself from those people who don't have access to AI. You are also getting more information about things that other people can't..." (SIII)

Other students did not see equity issues as problematic; instead, there were other concerns:

"I don't think AI separates people, but I do feel it could become a threat because people have detected feelings in the answers of AI-so it's closer to a human that you interact with. It can start doing things on its own..now that's scary (SII)

Finally, in item 15, "Do you think humanity is likely to worry about AI taking over jobs?", 80.9% of respondents seemed concerned about the possibility of AI technology displacing jobs and labor. Once again, despite the ambiguity of feeling of students towards AI, they tended to exhibit a significant amount of distrust toward artificial intelligence.

Furthermore, when asked about privacy issues, some students responded in a manner that seemed nonchalant:

"No-I have no worries about AI and privacy" (SI)

"I think there are privacy policies on every social media platform, just don't go into the dark web because there-are no agencies that can protect you from hackers and people using the dark web for illegal causes. I think the rest is safe" (SII)

"I never really thought about privacy concerns. This is not something I stop to think about" (SIV)

"Yes I hear about privacy issues all the time, but to me -getting the job done is more important"(SVI)

On the other hand, some students have reflected their concerns about privacy and AI by saying:

"I think the way that AI stores your information is really scary. Like literally, you feel you have very little privacy and can be prone to hacking like at any time" (SV)

"Yes; it's kind of scary. Every time I interact with her -I am inputting data about me which she stores and remember" (SIII)

Finally, the findings also suggest that there are ethical concerns warranting attention as 89.4% of students said they would use AI to help complete their assignments if university punitive measures were

removed. (Again, the afore-mentioned are summarized in [Table 2](#)).

5. Discussion

Thus, the purpose of this research was four-fold: to investigate the extent to which students were likely to resort to AI technologies and the respective reasons for its use, as well as to unveil English instructors' attitudes towards the said technology, and finally, to explore the extent to which students were aware of the harmful impact of AI vis a vis ethics and equity.

The findings seem to suggest that indeed, there are ethics related concerns vis a vis academic integrity and AI where approximately 85.2% of the students use AI for academic-related content, be it to get ideas from AI, maintain a high GPA through assistance for their assignments or get support in languages and writing emails. Furthermore, where 38% of the students resort to Bard and Quillbot, 25.6% of students revert to Chatbot GPT and 21.3% resort to Grammarly. The utility of the various AI tools is variegated: where Bard is used to generate creative content, informative essays, translation and coded programs, Quillbot is used for summarizing, paraphrasing as well as a citation generator. Furthermore, Chatbot is used for improving writing as well as assisting students in assignments, and Grammarly is used for language mechanics and grammar, punctuation, and vocabulary. Hence, these findings seem to go in line with the idea that AI is being used in ways that breach academic integrity and incite students to cheat or submit plagiarized work in the form of essay mills in higher education as well as getting AI to do students' assignments (Sweeney, 2023; Viktorivna et al., 2022; Choi et al., 2023; University of Buckingham Interim Report, 2021). In fact, as students use AI tools as means to an end, whether the end pertains to a student graduating or maintaining high grades, this holds the academic integrity of educational institutions questionable in line with the research of Abalkheel (2022) as well as Wogu et al. (2018).

Moreover, as concerns English instructors' attitudes towards AI, the findings seem to suggest that indeed, most language instructors are distrusting of AI technologies as they argue that students are more likely to cheat, also in line with the writings of Choi et al. (2023), the University of Buckingham Interim Report (2021) and Sweeney (2023). In fact, some instructors during the interviews went as far as to say that AI "makes students lazy as they would use it AI to cheat" and "kills creativity and original work". The interview results rendered go in line with Viktorivna et al. (2022) who argue that with AI, students are no longer motivated to read or to do the work, while Abalkheel (2022) posits that AI technology not only lessens student motivation to learn, but also renders less creativity in assigned tasks and may likely lead to boredom with respect to learning. This finding also goes in line with one respondent's belief that "AI makes people feel "careless" about information-as it's easily available rather than research". Finally, Wogu et al. (2018) talk about the "distancing effect" which they explain as students revert to using AI, they will be mentally and psychologically distanced from their object of study, and so are likely to become disconnected and disengaged from learning or developing. On a large scale, this may render serious concerns as students no longer look to education as a means for self-improvement and development. Furthermore, the findings seem suggestive that most language instructors did indeed welcome training to incorporate AI tools in the second language classroom. This finding aligns with Aiken and Epstein (2000) who argue that training is indeed necessary to keep up with the dynamic changes instigated by technology. Moreover, the findings equally revealed that instructors looked positively towards AI training to monitor students and guide them to the proper use of AI. Subsequently, although Font de la Valle and Araya (2023) do not suggest AI training be for "policing" purposes, they do suggest that teachers should be trained in order to guide students to properly use AI technology to the latter's advantage (Sharadgah & Sa'di, 2022). Such guidance could take the form of instructing students to evaluate information retrieved from AI tools to guarantee it is unbiased and scientific. Once students check the

credibility of such information, they can be trained to analyze and synthesize them in their own words.

The final research question gave way to a number of controversial findings; that is, while 70.2% of students found AI serviceable to them, around 84.05% of students were distrusting of AI, portraying a likely “love/hate” relationship between the automated applications and the users. This was especially flagrant when 100% of the students preferred having human teachers as opposed to teacher bots. This goes in line with the findings of [Shu and Xu \(2022\)](#) who posit that students are likely to be still dependent on teachers for the impartation of knowledge. Thus, where this finding runs contrary to the research of [Popenici and Kerr \(2017\)](#) who suggest that students are starting to become open to the idea of instruction by teacher bots, the research findings in this study also support [Wogu et al. \(2018\)](#) whose research illustrates that students are more likely to be inclined to teachers instructing them due to the affective interaction between teachers and students.

Another controversial finding obtained from the interviews was that out of the six interviewed students, three were vaguely aware of the privacy issues but were not worried as their primary concern was to get their work done and save time, while the other three did voice their concern for privacy issues describing it as “scary” the way AI tracks and stores their personal data. In terms of equity, out of the six students interviewed, three were aware of equity issues and the possibility of people losing their jobs, yet their responses did not go beyond the idea that machines might replace human beings which runs in line with [Acemoglu and Restrepo \(2019\)](#) who caution that automated AI was likely to deskilling workers and create job displacement. Moreover, one student out of the three spoke about how students with internet access were at an advantage -as they had access to AI, compared to those who did not have internet access. This finding runs in line with [Khuwaja et al. \(2023\)](#) who posit that AI is likely to entrench already existing digital divides, not only between the rich and poor, but among cities and villages as well ([Acemoglu & Restrepo, 2019](#)), in addition to developed and developing countries ([Khuwaja et al., 2023](#)). Specifically, [Khuwaja et al. \(2023\)](#) report that developed countries such as Liechtenstein have internet speed as high as 119 Mbps, where the US and China are at 92 Mbps; meanwhile, India has internet speed at 23 Mbps while Pakistan and Bangladesh at 3 Mbps. Thus, with lesser developed countries having poor WIFI infrastructure, they are likely to be more vulnerable to existing digital divides. In addition, ethnic minorities are also at a digital disadvantage with respect to mainstream hegemonic cultural groups ([Thind, 2023](#)).

Meanwhile, two out of six said they could not relate to equity disparities caused by AI nor were aware of them, while one out of six reported that AI does not cause equity disparities and that it wasn't a concern for them; instead, their concern was over the latest AI bots displaying feelings-which may render it a hazard to human existence if AI bots actually “starts doing things on its own”. This runs in line with [Bostrom \(2019\)](#) who cautions against the careless utilization of AI tools as they may lead to the “destabilization of civilizations” through AI-powered digital bots that carry deadly viruses, promote virus-based cyber-attacks, as well as the potential of running an arms race or event the most banal of threats, the uni-polarization of the world order through unchecked surveillance ([De Gourdon, 2002](#)).

6. Limitations and conclusion

The current study was not without its limitations. Although the sample size covered only two sections of an advanced writing English course, the study's 46 participants was sufficient enough to suggest preliminary evidence concerning students' opinions and attitudes regarding AI and its uses that may pave the way for further research in the future using a larger sample of participants from variegated educational settings and backgrounds. Moreover, the findings unveiled by this research are specific only to a sample derived from two sections of an English course 202. As such, the revealed findings once again, can not be

considered conclusive as they tap into a student sample using AI for a specific course as other students from other courses may foster completely different attitudes based on their interaction with AI given their assignments. A final limitation may also be the variable of time; AI is ultimately novel with its release in November 30, 2022 ([Hines, 2023](#)). As such, faculty and students alike may still feel trepidation and fear when interacting with it. Perhaps with the passage of time, and with the acclimatization to AI, attitudes may very well change. Once again, only further research in this domain could provide potential answers for the above-mentioned suggestions that may have limited the scope of the said study.

The research at hand attempted to investigate myriad facets of AI in higher education; namely, (1)the extent-if at all-to which students resorted to using AI in academic assignments and what tools were used as well as (2) the reasons for AI technology use, (3) teachers' attitudes towards AI as well as (4) the degree of students' awareness of privacy and equity issues associated with AI. The findings seem to suggest that indeed, and to a large extent, approximately 85.2% of students' utility of AI was used to assist students in writing their essays, summarizing, paraphrasing, giving students ideas about how to go about completing their assignments or projects, or even what to write. In addition, and interestingly enough, when asked on the survey whether they would use AI technologies if allowed in universities, 89.4% of students agreed although 100% of students refused the idea of having a bot replace teachers when it came to learning. This seems to suggest that although students enjoy the services offered to them to complete their university requirements and assignments, their preference for learning continues to be at the interactive level between other human teachers instead of AI bots. Moreover, the most popular AI tools, according to the study's findings set Bard and Quillbot in first place at approximately 38%, Chat GPT in second at around 25.6% and Grammarly as the third runner-up at more or less 21.3%. Findings also seemed suggestive that instructors were distrusting of AI, and where most of the instructors welcomed training, it was more so for “policing purposes”. Moreover, out of the six instructors interviewed, only two suggested revamping the curriculum to incorporate new assignments created by AI requiring added analyses by the student. Finally, the study also revealed an existing “love/hate” relationship between students and AI, where 70.2% of students on the survey thought AI serviced their academic needs, while at the same time, 84.05% of students on the survey expressed their distrust towards AI although they admitted to using it. Moreover, as concerns AI and equity as regards economy and socio-economic status, 80.9% were concerned that AI would displace jobs leaving people “jobless”. This finding was accompanied by students' non-specific awareness that digital inequalities were indeed eminent, yet not quite fathoming that digital inequalities do indeed reflect socio-economic inequalities through age, gender, ethnic minorities and geographic location. Furthermore, on the interviews, where all students were aware of existing privacy issues with respect to AI use to a certain extent, half gave this issue minimal attention as they were more concerned with AI facilitating their work, while the other half showed some signs of awareness for privacy concerns, though still equally not fully aware of the possibility of mass surveillance systems that may reinforce a unipolar world order. Finally, out of the twelve people interviewed, only one instructor and one student seemed aware of the potential impact of AI on national security. Hence, as suggested by the findings, it seems that there is a general lack of awareness of the potential critical consequences and harms that may be instigated by AI technology if a global system of checks and balances is not put into place and application.

It is clear that AI is here to stay. However, if history has taught mankind anything, it is that to guarantee continuity, harmony is required and not annihilation. That is, rather than adopt AI automation, politicians, economists, and pundits in all sectors need to consider AI augmentation for more sustainability. In the educational sector, teachers should be reskilled to use AI in the educational classroom and arm students with the necessary skills required by an ever-changing job

market. This, in turn, would require a revamping of the educational system at the curricular level where learning objectives and assessments are changed to accommodate the use of AI in the educational classroom where the student is assessed on his/her ability to critically evaluate a product presented by AI technology. In this sense, AI technology would thus become integrated into the process of teaching and learning via assigned “AI proof tasks”; these are tasks where a prompt or data is fed into an AI application yielding an “end product” which students then use to analyze, criticize, critique or build upon for a certain task or project. For example, in terms of English 202, an AI proof assignment would be asking Chat GPT to come up with a four-paragraph essay about say “Racism” where students assess the use of academic phrases/expressions, correct citations, coherence, articulation of ideas and referencing as well as strengths and weaknesses of the text based on criteria of the afore mentioned drills taught in class. In this manner, students would utilize their critical thinking skills to evaluate content on which their assessment grade is based. This solution, however, is not looked upon with much warmth in the arena of higher education as most instructors, curricula and educational institutions continue to hang on to almost archaic learning modalities and objectives. In the event of more advanced classes or degrees, theses or dissertations, perhaps greater weight would be put on a viva voce form of assessment to guarantee the student’s original work. In terms of more remedial classes, instructors are invited to use AI with a grain of salt if the assessment is in fact based on a mechano-linguistic level. Finally, there is an urgency for the implementation of punitive legislative practices to be put into effect vis a vis privacy breaches as well as equity issues, specifically through the displacement and derailment of both white- and blue-collar workers due to insufficient digital skills that may likely entrench the already existing divides at the socio-economic level-affecting administrators, students or teachers as well as other laborers and their respective children.

). Not only this, but a world where AI runs unchecked in the higher education is also likely to yield a generation of unskilled graduates in delicate professions such as medicine, nursing, nutrition, engineering or architecture; and with such a generation lacking in the basic skills of critical thinking and writing, and who are ultimately dependent on machines to think and write on their behalf, mankind will likely have planted the seeds of its own demise. As such, further research is warranted and should be undertaken to investigate AI’s impact on students’ critical thinking skills stemming from reading and writing specifically, in order to ensure that graduates, societies’ futuristic architects, indeed craft solid, safe futures that promote well-being at the global level.

Statement on open data and ethics

In line with the 1964 Declaration of Helsinki, the findings of this study originated from participants who were debriefed about the purpose of the study and whose consent and approval to participate were taken verbally. Moreover, participants’ identities remained anonymous, both during the questionnaire and the interviews, and whose raw data are available with both authors, Dr. Nehme Safa and Ms. Deema Dakakni and are available upon reasonable request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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