| **RESEARCH ARTICLE**

Relevancy and Outlook of the Technology-Enhanced Education within Digital Contents, Resources and Tools

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| **ABSTRACT**

Digital technology has become one of the most dictating determinants of this modern age; technology is gradually taking wider roles in every aspect of human activity and practice; education, teaching, and learning have centrally been apt to a wide range of changeability: technology-enhancement has facilitated the emergence of new concepts in education; technology- enhancement has also incorporated new roles for teachers, students, learning content, pedagogy, learning resources, instructional media and tools; as a consequence, the aim of this study was to investigate the relevancy and outlook of such a technology –enhanced education within the three domains of digital content, digital resources, and, digital tools. To achieve the aim of this study, a juxtaposed qualitative approach was followed to reveal and then describe such relevancy and outlook; the available literature has profoundly been surveyed to support the argument and the investigative range of this study; consequently, three essays, which are separate in form, but interrelated in their thematic topicality, have investigated three related issues: the first is why technology enhancement has dictated itself to the educational system, and how it has been changing the whole educational system; the second is why and how digital content can be an unavoidable digital resource and why there is a call to exploit digital contents and digital resources; the third is how digital tools, "Grammarly" as an example, bears some functional limitations that can cast some uncertainty over the degree of dependability that they are supposed to record. Accordingly, this study has generally concluded that technology enhancement, digital contents, digital resources, and digital tools are advantageous and exploitable as long as they are exploited rationally and reasonably; technology enhancement should be understood as an extension and not as a substitution to traditional educational practices; the study also concluded that the overdependence on technological and digital solutions could cast various risks on Human Intelligence (HI), thinking, attitudes, and behavior. This study comes up with various recommendations.

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1. Introduction

During the thirties of the last century, Aldous Huxley, in his famous novel " Brave New World," prophesized a "dystopian" reality of the relationship between humans and technology; humans, according to Huxley, as far as the researcher has understood, will exhibit more and more dependence on technology, which in turn, will dictate and shape various aspects of human behavior such as thinking, relations, reactions, practice, tendency, emotions, and activities; in this regard, Ali, Kottaparamban, Begum, Usmani & Abdallah (2023) have further explained that "Huxley predicted the use of technology to control our decisions, primarily through social media." As a result , it can be stated that the non-precedent spread of technology ,nowadays, vouches for those prophesies of Aldous Huxley: digital technology has entered every aspect of modern life to the extent that one can barely find a technology-

free practice that can be performed without digital solutions; Huxley's Novel "brave New World" , and as far as the researcher has comprehended, warned against a through human indulgence and dependence on technological solutions in a way through which human intelligence (HI) will gradually decay and fade away and, then, as a result, deforming aspects of human behavior may emerge; however, and away from the world as depicted by Huxley's novel "Brave New World", it must be stated that there is an undeniable margin of benefit in depending on technological solutions, but this dependence should be , as stated by , Campbell, E Sittig, Guappone, Dykstra & Ash (2007), as rational and reasonable as possible to lessen the proposed negative side-effects of the excess and overdependence on technological solutions.

As a mechanism of human survival, education has greatly been affected by the spread of technology (Angwaomaodoko (2024).), which has also changed various concepts of learning and introduced new roles for teachers, schools, classrooms, students, textbooks and learning contents, learning resources, and learning media; moreover, technological and digital solutions have equipped the learning and teaching practices with virtual landscapes that, otherwise, would not be possible without such technological and digital solutions; this, as a consequence, reinforces the importance of investigating how technology is transforming traditional practices of teaching and learning, what product can be as an outcome of such a transformation, and how reliable the transformed product can be. Accordingly, this study investigated, in a descriptive approach, three related issues: the first is the relevancy and outlook of technology –enhanced learning, the second is the digital learning-content as a common product of this modern age, and the third is how "Grammarly", as a digital exemplar and a web-based tool, can be a practical demonstration of the dependability of exploiting digital solutions in the teaching, learning, and assessing writing skills. These three issues have been manifested in an essay layout so as to gain more thematic concentration on each one of the above mentioned issues of technology enhancement and the teaching-learning process; in this regard, it should be stated that these three essays, though may seem to be unconnected, are thematically interrelated as technology –enhanced learning entails the existence of digital-learning content, as a backbone of digital learning, which can be communicated, maximized, developed, and assessed by a variety of digital tools and applications; these three issues, in addition, and as far as the aim of this study is concerned, offer a juxtaposed understanding as investigating each issue, in such an essay matrix, allows a deeper consideration to the sum of themes constituting each issue, but from a different angle which, in turn, augments the central argument of this study.

This study bears the limitation that its investigative range provides a distilled argument about the three issues of technology-enhanced education but, at the same time, presents an adequate scope of deductive and inductive reasoning that allows a relatively developed understanding of the magnitude of the topic; this study also bears the limitation that its investigation was generally focused on the grants offered by technology rather than the negative impacts of the overdependence on technology in both teaching and learning, but rather than dialectically investigating the proposed risks of the technology enhancement in the teaching and learning processes.

2. Essay (1): Technology-Enhanced Education: Relevancy and outlook
Technology-enhanced education, as far as the researcher has found, has become an inevitable trend due to the proliferation of digital technology in every aspect of modern life; as a result, the educational system has to cope with such flux of digital technology or, else, it would be archaic and not able to take its leading role in preparing all the parties, involved in the teaching and learning processes, such as curriculum, teachers, schools, and specifically learners whom many hopes are pinned upon to be able to cope with the requirements and the skills that are in high demand all through the 21st century; Bourdeau&Balacheff (2014) explain that " it is essential for the education system to incorporate new digital media as tools for intellectual expression and production." This cannot be achieved, in the researcher's opinion, unless some considerable effort is paid towards making the traditional pedagogy compatible with these expanding digital innovations, which, then, leads to educational breakthroughs; this idea was explained more byLuhmann&Schorr (1982, cited in Bourdeau&Balacheff, 2014) who confirm that "One of the strongest arguments for bringing new digital technologies into schools and other educational institutions is that, by doing so, we would trigger pedagogical innovation."

Technology-enhanced Learning (TEL) is also supposed to play a sustainable educational role as it is supposed to equip students with transferable skills and practices that can be effective enough to save resources and guarantee educational continuity, which can lead to the realization of leaners' individualization; Kirkwood & Price state That " The term Technology-enhanced learning (TEL) is used to describe the application of information and communication technologies to teaching and learning." in this regard, in addition, Bourdeau&Balacheff (2014) conclude that "Education has a role in preparing people for work – traditionally for the industrial environment, but now for the knowledge economy, and that must affect both what and how students learn. "Accordingly, it can be stated that Technology- enhanced learning (TEL) has emerged as a necessary attribute of 21st educational system, and not as a luxury; Technology-enhanced Learning (TEL), as confirmed by the available research, has deep roots within the philosophical sphere of learning theories: behaviorism, cognitivism, and constructivism have differently explained how learning is supposed to happen, but at the same time, they all agreed on the importance of learning environment, with its external and internal elements, to facilitate learning; by the same token, Technology-enhanced Learning (TEL) has a great role in minimizing the learning hindering-factors within the learning environment, and maximizing the motivating factors Jabsheh, A.-A.-H. (2024);

Bourdeau&Balacheff (2014) conclude That "TEL research helps to professionalize the teacher, giving them the opportunity to create the ideal learning environment for all their students, and greatly extending their practice beyond the capability of conventional methods. "de Vries, Demetriadis& Ainsworth (2009) state that "A multi-representational environment provides increased potential for adjustment to individual differences in representational preference or skills, for allowing multiple strategies or for fulfilling a range of different tasks." de Vries, Demetriadis& Ainsworth (2009) add that " the use of appropriate multiple representations for supporting learners to develop deeper or more abstracted understanding of the domain. In the absence of the represented world, multiple representations are crucial in constructing deep understanding."Technology-enhanced Learning (TEL), in this sense, does not function as a substitute for the existing practices of teaching and learning but as an enhancing model that facilitates new approaches in designing the learning environment and equalizing the learning variables, Bourdeau&Balacheff (2014), in this regard explain that (TEL) " is not focused on "efficiency" in terms of using technology to accelerate learning processes by faster delivery and distribution of learning materials. It is rather oriented towards the role of technology to enable new types of learning experiences and to enrich existing learning scenarios."Kirkwood & Price (2014) further explain that " the question is not whether technology enhances learning, but, on the other hand, "*how can we design technology that enhances learning, and how can we measure that enhancement?*"This dictates the emergence of new roles for both teachers and students: teachers should play the role of, as stated by Bourdeau&Balacheff (2014), "designers of learning" and educational innovators"; these new roles of teachers would impact and shape the roles of their students; as a result, there will be a need for more research to investigate students' attitudes, roles, and perception against the more updated roles of teachers and the Technology-enhanced Learning (TEL); Kirkwood & Price (2014) conclude that more research is needed " to determine students' perceptions and reactions to the teaching modifications introduced."

Technology–enhanced learning does not mean refusing or dismantling the traditional system exclusively, but, on the contrary, focusing on the knots within the traditional system, which can be used as platforms to carry on connecting the modern new digital technology with the traditional system, yielding innovative pedagogy and a developed educational system; Bourdeau&Balacheff (2014) confirm this issue by concluding that "It is less risky to use technology simply to improve current practice." Cautiously, bearing in mind the disruptive nature of technology, ((Bourdeau&Balacheff (2014)) state that adapting digital technology to traditional practices in teaching and learning is not as simple as it may seem to be: first and while adapting technology, the e-literacy of both teachers and students and attitudes must be taken into consideration; their involvement should be negotiated and guaranteed which means the initiative should be from within the of system, not from outside; confirmatively, Luhmann&Schorr (1982, cited inBourdeau&Balacheff, 2014) assure that "Essentially, we cannot re-engineer or adapt the system from outside, it has to adapt itself."; (Wenger, 1999) also " proposed that when any group is given an artefact produced by others, they have to engage in the process of making sense of how this relates to what they already do as they start trying to use it. "Second, adopting digital technology entails the existence of technical e-knowledge and infrastructure-related issues that can boost or, else, hinder the adaptation process of digital technology. Accordingly, as proved by the available research, it can be deduced that Technology–enhanced Learning can have a considerable area of applicability and compatibility to traditional practices in teaching and learning as technology adoption means new approaches in designing learning and instruction, which can lead to pedagogical innovation and sustainable learning outcomes; but maximizing the level of adoption to digital technology entails two areas where more research is needed: the first area of concern is the question of whether enhancing more technology can impact the thinking and intellectual skills of learners and teachers; the second area of concern is the ethical issue that might be perceived differently with more and more digital technology like the (AI) which dictates much research before it is too late.

3. Essay (2): The Digital Content As An important Common Digital Source of learning.

Previous related literature has considered that educational content, in its traditional physical media, has gained a considerable focus within theories of learning: behaviorism has called for transforming the educational content into smaller linear tasks that can be expressed by behavioral objectives which , in turn, can be observed and measured by the teacher; cognitivism has called for organizing the educational content in a hierarchal manifest that goes with the cognitive context and the previous knowledge of the student; cognitivism has also suggested that the educational content should be presented in various possible versions to meet the cognitive variables and the learning styles of the students; constructivism , on the other hand , has considered that educational content transcends its physical entity , represented by a text book for example, to include other entities in the real physical world that a student can discover and , then, construct quasi-formidable content-based knowledge.

The emergence of the connectivism as a theory of learning , as far as I have understood, and the spread of technology in this digital age, have opened wider educational horizons as they advocate the idea that learning can successfully occur through digital channels and solutions ; this reasoning has led educators to consider the concept of 'digital content' which can be viewed as an enhanced version of the classic content in its traditional media; Özcan & Yavuz (2020) has concluded that " designing digital content appropriate for learning has become a necessity in order to support students' needs for learning" ; moreover, it should be stated that designing digital content entails that the process of designing that educational digital-content should be based on

an established definition of such a content, and on the availability of digital media which should be compatible , adaptable, manageable, and accessible Özcan & Yavuz (2020) ; Gaffney (2010); as a result , in regard to defining digital content, two definitions will be considered in this essay : the definition of Rowley (2008) which considers " Digital content as bit-based objects distributed through electronic channels." ; while the second is the definition of Lakshiminarayana & Krishnaiah (2012), who consider that digital content can be defined as " content based on images, Audio, Video, having interactivity and other types of digital content incorporating the software to run digital educational content as per the syllabus adopted." The two definitions do agree, in essence, that digital content is transmitted, facilitated, and distributed via digital media and electronic tools; on the other hand, Sulianta & Supriatna (2019) have explained that producing digital content should be anchored to the same traditional content with its physical media, and once the transformation process is complete, the educational digital content can be made available, as an open digital resource, to the society of educational users; The diagram below, which was adapted from Sulianta & Supriatna (2019), explains the transformation process of the digital content into an educational digital resource:
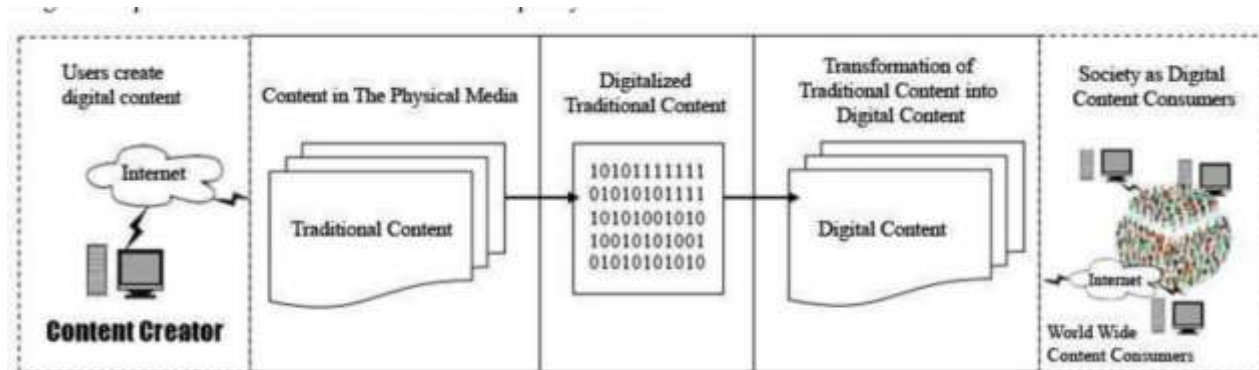
Depending on diagram   above , it can be deduced that digital content can be transformed into a digital resource , and , at same time, can be made to interact with the already existing digital resources in a give-and-take relationship; in other words, the digital content, once transformed, can enrich the existing educational digital resources, and, correspondingly be enriched, modified , or enhanced by these existing educational digital resources and the community of users ; as a result , I believe, digital content has currently gained a booming status as one of the main components of educational digital resource; moreover, digital resources, including digital content as a resource, has been preferred for various reasons: digital resources allow variety of formats of the digital content which goes with the various learning styles of learners ;this idea has been assured by Abdurazakov , Volkova , Vasilyeva, Matveeva & Tyutyunkova (2020) who state that digital resources include different "didactic capabilities (visualization of educational material, increasing the interactivity of learning, access to new sources of knowledge, efficiency of control, etc.)"; Özcan & Yavuz (2020) has concluded that "Recently, in and out-of-school learning environments have been enriched through digital content, which attracts researchers attention." Morais, Miranda & Alves (2015) have confirmed that digital resources are capable of "Achieving the highest level of learning in the shortest time possible and with the lowest effort." In addition, Özcan & Yavuz (2020) has pointed out that "the subjects that are abstract, difficult to try, and expensive are possible to conduct through digital content." In my opinion, this is a critical advantage of digital content in that it allows some kind of simulations, which would be impossible without digital resources and tools, and which aid the learner in constructing a comprehensible virtual reality of the abstract content.

These above mentioned advantageous considerations that are attached to exploiting digital content as an educational digital source should be coined with some commitments that must be fulfilled by the community of users of the digital content; these commitments include the full respect of both intellectual and property rights, suitable production technicality, acceptable standards of quality, and enough digital adequacies Sulianta & Supriatna (2019).

Correspondingly, it can be deduced that digital content, as an exploitable digital educational resource, should be viewed as a dynamic reinforcing propellant to both teaching and learning practices inside or outside the classroom; digital content augments the material and the learning environment in ways, as explained above, which can go with the demands of the theories of learning of how to make learning as meaningful, interactive, personalized, and autonomous as possible; in other words, digital content correlates with the findings of those learning theories that explain how people learn, and, on the other hand, provides a valuable practice which can reveal the strengths or, else, the weaknesses of the educational digital content so as to take any further action needed to achieve high quality of learning and teaching practices. Finally, it can also be deduced, from the above mentioned arguments, that digital content, in its various digital formats, can be the preferable digital resource because "digitalism" is the lingua franca of this modern age, especially among students of today in addition, it can also be deduced that digital content and

digital resources can achieve a wider scope of educational objectives, but, by the same token, caution should be paid that their use should not turn to be an objective in itself.

4. Essay 3: "Grammarly" as a Web-based Tool in Teaching and Learning Writing Skills.

Grammarly is a web-based tool that can proofread written texts in order to check for grammatical mistakes, spelling errors, and sentence structures. Grammarly stands for a state-of-the-art development in digital technology and Artificial Intelligence(AI) and is highly preferable to millions of users because of some important considerations: Grammarly is free and can be easily installed through a "Gmail" account; once registered successfully, the green logo of " Grammarly" emerges, and, then, it can be used instantly; Grammarly is also compatible to mobile phones and can be manageable to users of different ages and different backgrounds; moreover, using Grammarly does not need a wide-range of digital skills or a focused amount of digital literacy. Fitria (2021) explained That "Grammarly document allows the user to compose text directly on the document, download their Grammarly document as a text file, upload text, and adjust the setting." This can be facilitated due to the fact that "Grammarly" is compatible with a "Google Chrome extension" which allows a free- online check on grammatical mistakes, spelling mistakes, wrong sentence construction, and plagiarism traces within a given written text; moreover, Fitria (2021) explained that "Grammarly detects and corrects prepositional errors, irregular verb conjugations, inappropriate use of nouns, and also corrects words that are misused."

Grammarly consists of two features, both individual (free and premium version) and team (business version). The description is as follows:

FOR INDIVIDUALS
Free
Basic writing suggestions.

Current Plan

✓ Spelling
✓ Grammar
✓ Punctuation

FOR INDIVIDUALS
Premium
Style, clarity improvements, and additional advanced corrections.

Get Started

✓ Everything in Free
✓ Clarity-focused sentence rewrites
✓ Tone adjustments
✓ Inclusive language
✓ Word choice
✓ Formality level
✓ Fluency
✓ Additional advanced suggestions

FOR TEAMS
Business
Professional and clear communication for teams of 3 to 149.

Get Started

✓ Everything in Premium
✓ Style guide
✓ Admin panel
✓ Centralized billing
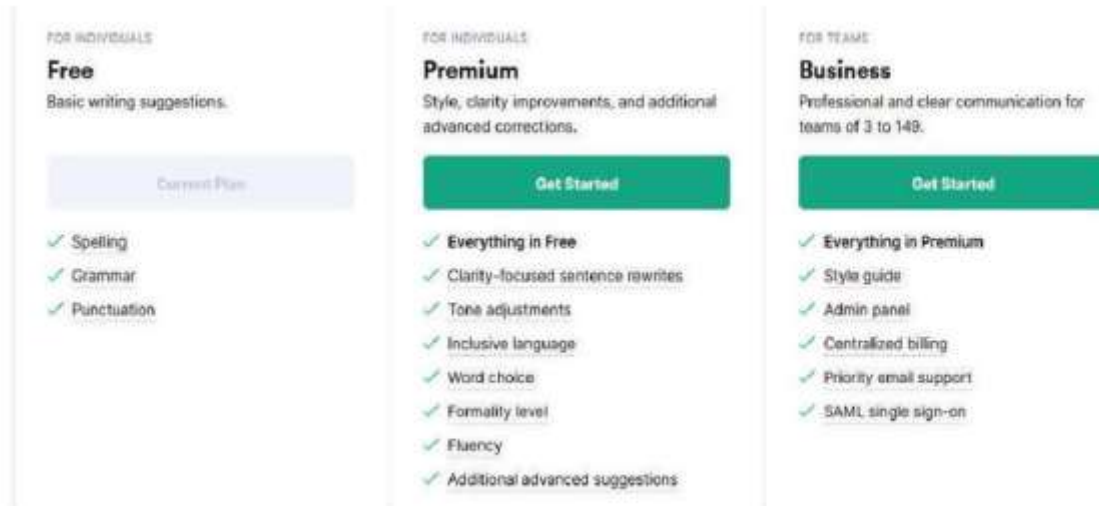✓ Priority email support
✓ SAML single sign-on

Figure 2. Grammarly Features

Grammarly is an Artificial Intelligence (AI) tool that functions in accordance with a previously inputted corpus of the Model structure of the English sentence in a matrix that the algorithms of AI can compare and recognize; for example, Fitria (2021) described that "If we want AI to learn the patterns of proper use of commas, we need to show it sentences of incorrect commas so that it can learn what a comma error looks like. We need to display it with efficient comma-use sentences so it knows how to correct comma errors when it finds them." As a result, Grammarly underlines the errors in red and then automatically provides suggestions for the correct usage that can simultaneously be replaced by the user Tucker (2015).
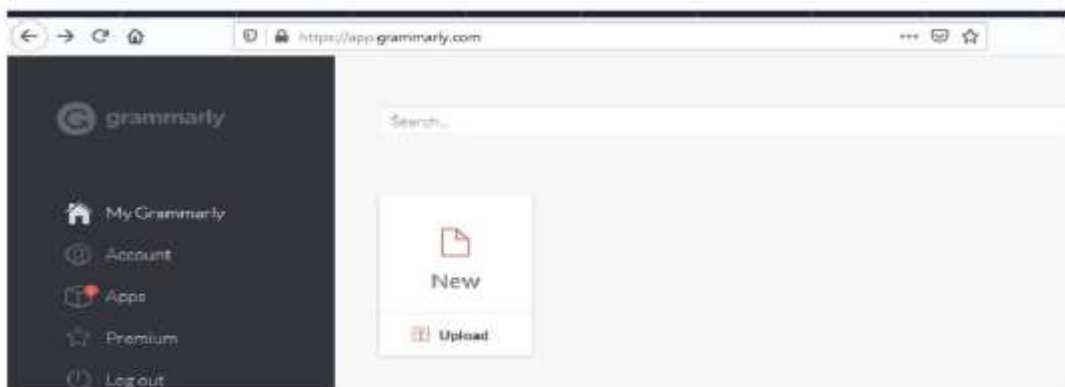

Figure 1. Uploading the Document/Text in Grammarly

Grammarly is different from other language checkers and translators as it exploits an updated wider range of word synonymy, sentence patterns, grammatical rules, and structural layers, which can all be mixed by the algorithm of (AI) to firstly analyze the written text, and secondly, respond to a given error; in other words, Grammarly merges various writing styles, writing technicalities, grammatical and structural formats to correct a given error or mistake. Carter &Laurs (2017) described that "Grammarly is assistive software for correcting text in alignment with English conventions. After the text is uploaded into the Grammarly cloud, the software will analyze it by using several different algorithms and can identify a surprising range of both grammar and style issues."

Figure. 3. Free features of Grammarly in spelling, grammatical, and punctuation

It is acknowledged that using Grammarly has positive impacts on reducing the frequency of errors students, in terms of vocabulary usage (diction), language use (grammar), and mechanics (spelling and punctuation), that students normally commit while writing English sentences paragraphs or essays because Grammarly allows the possibility of comparing written texts before editing and, then, after the editing and corrections are carried out by Grammarly Ghufron&Rosyida (2018). Grammarly is also advantageous in that, as stated by Qassemzadeh &oleimani, 2016), it " encourages the students to be autonomous and independent learners as it requires the students to independently evaluate their own works with the help of feedback provision given by the system."In this regard, Fitria (2021) concluded that "The findings of the study confirm that the student's work assessed by using grammar have a substantial decrease in their mistakes relative to those work evaluated by the teacher (indirect corrective feedback). The program is more effective in eliminating mistakes in terms of vocabulary usage (diction), language use (grammar), and writing mechanics (spelling and punctuation)."
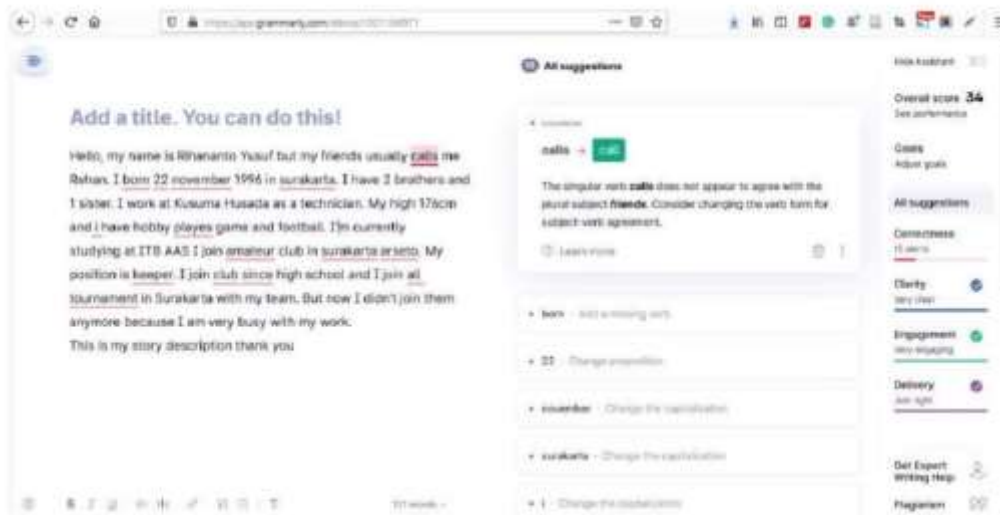

Figure 6. The View of Document Before Using Grammarly

Although Grammarly has positive implications on the writing skills of foreign learners of the English language, on the other hand, Grammarly can entail some setbacks and precautions: First, teachers should make sure that students are familiar with the related skills to operate Grammarly correctly Ghufron&Rosyida(2018); second, teachers also should make sure that students are equipped with basic competence in in English language grammar and sentence various structures and patterns so as to be able to deal with

the feedback and corrections offered by Grammarly; third, teachers should consider that Grammarly is very less effective in making judgments in regard to the content, cohesion, coherence, and organization of the written text; these aspects of written texts can be judged by the teacher as the algorithm of Grammarly can not deal with these aspects. Ghufron and Rosyida (2018) further explained that "Grammarly software, the system cannot detect whether or not the content of students' writing is appropriate with the topic. The system also has low detection on the sentence movement in each paragraph, whether the paragraph has a good coherence or not."Fourth, it must be stated that, regardless of the fact that Grammarly may be a beneficial software to enhance learning some aspects of writing in the English language, at the same time, it should be highlighted that the validity and reliability of Grammarly as a software to evaluate students written production needs more research and further studies; in other words, teachers are the best evaluators of the students written texts and paragraphs because teachers as stated by Ghufron&Rosyida(2018) that "The teacher will easily recognize if there is a gap between the topic and the content. The teacher also can feel sensitively if he/ she finds that the paragraph has bad coherence. However, overall, the students whose works were evaluated through Grammarly software have better EFL writing skills as the software can help them significantly reduce the errors they have made."
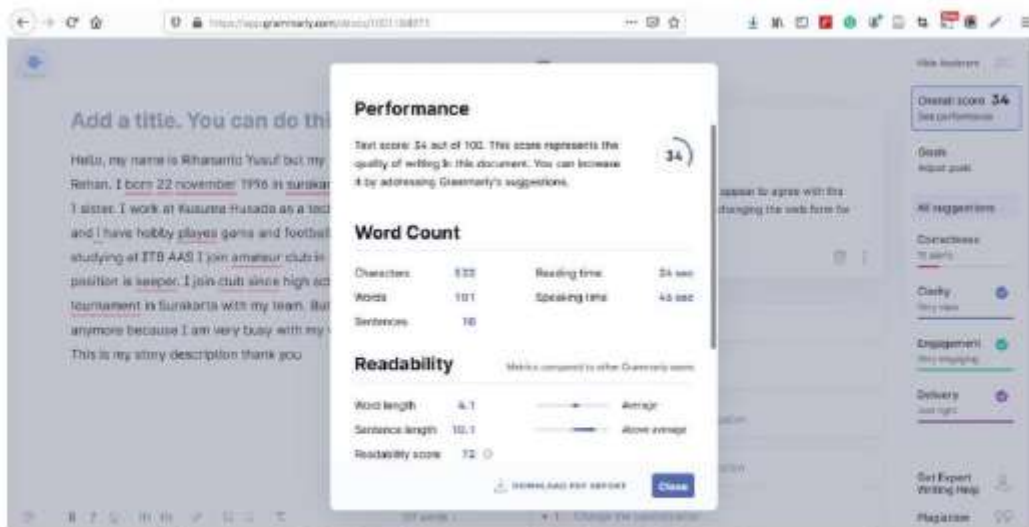

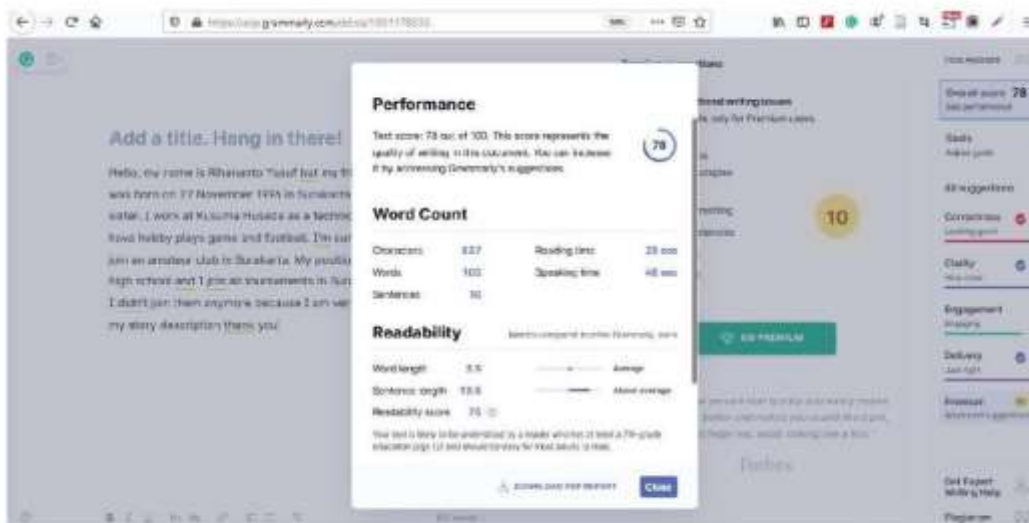**Figure 4. The Performance Before Using Grammarly**

Figure 5. The Performance After Using Grammarly

To sum up, it should be said that Grammarly, like other online-applications, cannot be ultimately effective in regard to written text and, as a result, teachers should be cautious while using Grammarly or other related applications as assessment tools to judge students' written productions as there will always be some aspects, within the written text, that best be measured and judged by

a specialized human subject; however, Grammarly can be enhanced, under the supervision of the teacher, in ELT-classes, as a motivating tool to learn some important technicalities of writing such as spelling, grammar, and structure of English language.

5. Discussion:

In reference to the available literature, and the above mentioned essays, it can be argued that the overwhelming spread of digital technology, nowadays, is changing how the educational system functions, how and what students learn, how teachers teach, and how significant or effective a given pedagogy can be; educational system , in its traditional and physical entity, must correspond to such digital orientation, or, else, it may not be able to take a leading role towards a global sustainable development ; this is because technology –enhanced education , generally , is supposed to function in less time, less effort, and within the minimum demand of educational resources ; this proposed sustainable role ,of the educational system in its physical and traditional entity, and as far as has been mentioned within the available literature, cannot be achieved without resorting to the technological and digital solutions which can boost and develop the learning and teaching practices : technology –enhanced teaching, on the one hand, can strengthen and sharpen teachers' sustainable adequacies and pedagogies that save time , effort, and, as a result, cost which can be expressed in terms of not depleting educational resources ; on the other hand, technology enhanced learning can enable students to learn with minimal time span, nominal effort, and basal demands of resources; technology-enhanced learning can also actualize students' learning autonomy and self-assessment depending on the wide range of solutions, tools, and resources granted by digital technology; technology-enhanced learning can make students be able to self-monitor their development within the learning continuum as instant feedback can simultaneously   be offered ,and, thus, allowing enough space for modification, accommodation , and viability of the learning experience and outcomes.

For the sake of considering   technology enhancement as being on the right educational track, this study, and in reference to the available research in the field, considered the theoretical ground upon which technology –enhanced education and learning were built: the focus, of this study, goes to the teachings of three learning theories ,namely, Behaviorism, cognitivism, and constructivism to foreground two maxims, as far as this study is concerned, related to the technology –enhancement in teaching and learning : the first is that the three theories agreed on the importance of the learning environment, though from different perspectives, as an orienting factor to the teaching and learning practices; such a learning environment should be designed in a way that can maximize the efficiency of the teaching process, and minimizing the hindrances of the learning process (Jabsheh, (2024); the second , moreover, is that theories of learning, as confirmed by Gagnon & Collay (2005); Schunk (2012); Rossner-Merrill, Parker, Mamchur & Chu (1998); Duval , Hodgins, Rehak & Robson (2003); aKrishnamoorthy , Prelatha, David & Manikam (2021), have highlighted the importance of "content" to design teaching and learning practices; content, in this regard, should be flexibly designed , organized in an effective hierarchy , presented in various formats, and expressed in a corporate entity. Accordingly, it can be deduced that technological solutions can ultimately optimize the learning environment and formatively enhance the learning content: technological solutions, in reference to the available research, can yield simulative learning environments, digital contents, and open digital resources which, in turn, can make learning and teaching easier, entertaining, to the point, effective, tailored, and as autonomous as possible; these practical consequences, collectively, stand for the rationale for the tendency to enhance technology within teaching and learning.

Technology–enhanced learning environment and a digitally-enhanced content, as far as the aim of this study is concerned, do not, and should not, constitute a replacement of the traditional and physical entities of both, but, on the contrary, they both should be managed to function in parallel with the traditional learning environment and the physical learning content as reinforcements, but not replacements which may cause, as concluded by Moustaghfir & Brigui (2024), "displacement" of human intelligence, an acute drain in human thinking skills, and a detached and deviant behavior that is digitally-oriented; in this regard, moreover, Rugai & Hamiliton-Ekeke (2016) conclude that "over-exposure to and over-use of technology can result in a dependence on digital devices, leading to behavioral symptoms similar to any addictive disorder, as the user neglects to maintain a healthy balance between using technology and socializing outside of it." Rugai & Hamiliton-Ekeke (2016), in addition, further explains that "The negative side-effects of overusing technology have in recent decades attracted increasing attention as a legitimate psychological disorder."

The above mentioned discussion, as far as the researcher opines , has established dependable reasoning for the introduction of (Essay 3) , entitled "Grammarly", as a web-based tool in teaching and learning writing skills; the significance of this essay, which is presented in a juxtaposed matrix with the first and second essays, lies in the fact that it can be considered, as far as the aim of this study is concerned , as an exemplar through which it can be understood that a balance endeavor, towards enhancing technology , should highly and seriously be taken , and, on the other hand, technology will always bear some limitations which are dialectically possible from within the technological system itself, and not necessarily from outside, because technology , like this modern age, is fast changing to the extent that the lifespan ,of some given technological and digital entities, is timely short and prone to technical and functional obsoleteness soon after the emergence of new technologies; "Grammarly" , as investigated in essay (no. 3), can be taken as a model which expresses the limitedness of technological solutions , at one end of the continuum, and, at the

other end, certifies the exploitability of technology in the teaching and learning ; "Grammarly" , as concluded by essay (no.3), can be advantageous in the teaching and learning of writing skills as it can provide the learner with facilitating valuable feedback in regard to vocabulary and grammar which enables the learner to edit, correct, and redevelop her of his written piece; while this may be considered advantageous aspect of "Grammarly" , the limitedness of "Grammarly" to carry automated assessment , of the learners' written product, and a way from human subjective interference, carries much doubt because the algorithm according to which "Grammarly" functions, as revealed by the available research, at the surface level of the semantic compositionality of a sentence; consequently , this indicates that most deep layers of meaning are barely acknowledged by the algorithm of "Grammarly" Joundy Hazar, Hussein Toman & Hussein Toman (2019); this also stresses the necessity of the human factor in assessing students written products because, and as concluded by Alzahrani , Alzahrani, Al Arfaj, Almohammadi & Alrashidi (2015); Tang Rich & Wang (2012); Williams & Nash (2009), writing is an expressive human activity which is normally charged with the writer's feelings, emotions, psyche, attitudes , and , after all, an intended pragmatic meaning that cannot effectively be tracked and assessed by digital algorithms.

6. Conclusions

In line with the findings of the available related literature, and in reference to the presented three essays, this study concludes that technology-enhanced education and learning should be calculated and balanced against some vital parallels: first, technology enhancement should not mean demolishing traditional practices in their physical entities, but, on the contrary, be viewed as enhancing elements and factors to such traditional entities; second, technology enhancement should consider the changeability of the technological and digital tools and resources as time goes by; in other words, what works today may not function well for tomorrow; third, technology enhancement should be grounded to a detailed needs analysis of students, teachers, curriculum, and the institutional demands; fourth, technology enhancement should go in line with the precaution that overdependence on technological and digital solution may yield some negative side-effects for human thinking, behavior, attitude, and tendency. This study, in this regard, concludes that the unprecedented spread of educational digital-contents and digital resources dictates the existence of solid criteria of selection and adoption that meet the maxims of well-established models to guarantee quality and sustainability in teaching and learning. This study concludes that some teachers' techno-concerns can be a critical factor that orients their readiness to enhance or else, not adopt technological solutions; this study concluded that digital literacy, mainly on the part of teachers, could also be a deciding factor in forming a critical decision towards technology enhancement. This study also concludes that digital tools and digital resources, "Grammarly" as an example, may not be as dependable as they are supposed to be; as a result, this study concludes a human subjective interference is inevitable, especially in assessing expressive written products, which are normally charged with human elements that can hard be tracked by digital tools.

6.1 Recommendations

In line with the above presented discussion and conclusions, this study recommends further longitudinal research investigating, though it is a literary-centered domain, the "dystopian" outcomes of technology enhancement on the individual and community as well; this study, at this turning point of the educational history, recommends further research to investigate the rights of intellectual property while exploiting digital content and digital resources; this study recommends carrying out empirical research to investigate the impact of technology enhancement on the ethical and moral repertoire of teachers and students in an educational setting; this study also recommends further research to investigate the dependability of digital tools in carrying out realistic automated marking to assess writing as a language skill.

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