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THE EFFECT OF ONLINE LEARNING PLATFORMS ON STUDENTS' PERFORMANCE IN HIGHER INSTITUTIONS IN CAMEROON

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APPROVAL

This Master's dissertation entitled "The Effect of Online Learning Platforms on Students' Performance in Higher Institutions in Cameroon" has been read and approved by the undersigned as meeting the requirements of the University of Yaounde 1 (UY1).

By

PRESIDENT OF JURY

CROSS EXAMINER

DECLARATION

I, Agwa Jane Washima, a student of the Department of Curriculum and Evaluation in the Faculty of Education, University of Yaounde 1, with registration Number 20V3743, hereby declare that this piece of work entitled “The Effect of Online Learning Platforms on Students’ Performance in Higher Institutions in Cameroon”, under the supervision of Pr. Ndi Julius Nsami is my work and all used materials have been acknowledged through quotations and references.

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CERTIFICATION

This is to certify that Agwa Jane Washima, registration number 20V3743, a student in the Department of Curriculum and Evaluation in the Faculty of Education at the University of Yaounde 1, has satisfactorily completed the requirements for the Master of Education. This work entitled “The Effect of Online Learning Platforms on Students’ Performance in Higher Institutions in Cameroon”, under my guidance and supervision was carried out in the Department of Curriculum and Evaluation. This work embodied in the research original and has not been submitted in part or full for any other Degree of this institution, or another University.

President of Jury

Examiner

Supervisor

Head of Department

Date ___/___/2022

DEDICATION

This piece of work is dedicated to my beloved parents of blessed memory

Mr. Agwa Boniface and

Mrs. Agwa Monica Mbatoon.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA:	Analysis of Variance.
CEV:	Curriculum and Evaluation
CMC:	Computer-Mediated Communication
CPY:	Counseling Psychology.
CST:	Curriculum Studies and Teaching.
CUP:	Curriculum and Pedagogy.
DID:	Didactics of Disciplines.
EDS:	Special Education.
EDL:	Educational Leadership.
EDUTECH:	Educational Technology.
EFA:	Educational Foundation and Administration.
EFE:	Fundamental Studies in Education.
EPY:	Educational Psychology.
IOE:	Intervention, Orientation, and Education of Extracurricular Activities
IOP:	Instructor's Online Presence.
LC:	Learning Content.
MED:	Educational Management.
INT:	Interaction.
OLPs:	Online Learning Platforms.
PEA:	Physical Education and Animation.
SPE:	Special Education.
SPSS:	Statistical Product for Service Solutin
TED:	Teacher Education.
UBa:	University of Bamenda.
UB:	University of Buea.
UY1:	University of Yaounde 1.

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ABSTRACT

This study investigates the effect of online learning platforms on students' performance in higher institutions in Cameroon". The problem of this study emanates from the low quality of knowledge and skill acquired by university students in the context of output and digitalization. Four research questions with four research hypotheses were formulated to guide the study. Some related theories were used such as the cognitive theory of multimedia learning, the achievement goal theory, and the social learning theory. The tool used for data collection was the questionnaire and regression analysis were used to test the hypotheses. Data collected was analyzed using descriptive and inferential statistics with the help of IBMSPSSV26. Analysis of data demonstrated that quality student performance through good instructor's online presence, learning content, interaction, and perceived use statistically influence students' performance significantly. A significant regression equation was found to be $[f(1,325) = 21.972, p = 0.000]$, with an R^2 of 0.122. All four specific hypotheses were confirmed and all null hypotheses were rejected. Therefore, it is recommended that higher institutions stakeholders in Cameroon should draft policies and curricula that will favor the creation of a healthy instructor's online presence, learning content, interaction, and perceived use, organized workshops to train staff on course content, teaching style, to ensure the development of good performance skills by graduates and hence promote their positive contribution to sustainable socioeconomic growth and development through their successful integration of the job markets. One major limitation faced was the reluctance of respondents to participate in answering the questionnaire.

Keywords: Instructor's online presence, learning content, Interaction, Perceive use, Students' performance.

RESUME

Cette étude examine l'effet des plateformes d'apprentissage en ligne sur les performances des étudiants dans les établissements d'enseignement supérieur au Cameroun ». Le problème de cette étude émane de la faible qualité des connaissances et des compétences acquises par les étudiants universitaires dans le contexte de la production et de la numérisation. Quatre questions de recherche avec quatre hypothèses de recherche ont été formulées pour guider l'étude. Certaines théories connexes ont été utilisées telles que : la théorie cognitive de l'apprentissage multimédia, la théorie des objectifs de réussite et le style d'apprentissage VARK. L'outil utilisé pour la collecte des données était le questionnaire et des analyses de régression ont été utilisées pour tester les hypothèses. Les données recueillies ont été analysées à l'aide de statistiques descriptives et différentielles à l'aide de SPSSV26. L'analyse des données a démontré que la qualité des performances des étudiants grâce à une bonne présence en ligne de l'instructeur, au contenu d'apprentissage, à l'interaction et à l'utilisation perçue influence statistiquement de manière significative les performances des étudiants. Une équation de régression significative s'est avérée être $[f(1, 325) = 21,972, p = 0,000]$, avec un R^2 de 0,122. Toutes les quatre hypothèses spécifiques ont été confirmées et toutes les hypothèses nulles rejetées. Par conséquent, il est recommandé aux parties prenantes des institutions supérieures au Cameroun d'élaborer des politiques et des programmes d'études qui favoriseront la création d'une présence en ligne, d'un contenu d'apprentissage, d'une interaction et d'une utilisation perçue d'un instructeur sain, d'organiser des ateliers pour former le personnel sur le contenu des cours, le style d'enseignement, assurer le développement de bonnes compétences de performance par les diplômés et ainsi promouvoir leur contribution positive à une croissance et un développement socio-économiques durables grâce à leur intégration réussie sur les marchés du travail. L'une des principales limites rencontrées était la réticence des répondants à participer à la réponse au questionnaire.

Mots-clés : Présence en ligne de l'instructeur, contenu d'apprentissage, Interaction, Perception de l'utilisation, Performance de l'élève

CHAPTER ONE

INTRODUCTION

In the 21st century, Higher education teaching and learning have evolved largely from the traditional classroom to the virtual classroom (Lawyer, 2019). This massive shift from the traditional classroom to the use of online learning platforms is fast gaining ground around the world and Cameroon in particular as higher institutions hurriedly adopted online learning platforms to study mood to keep learning while staying safe (Teke 2012). The Ministry of Higher Education in Cameroon and Universities took strategic and drastic actions towards the use of online learning platforms like Google Classroom, Moodle, and Google meet, to ensure that learning should not be disrupted. In this case, both learners and teachers study in both physical and virtual classrooms, using platforms like moodle and Google Classroom. These online platforms have varied programs for learners all over the world to take at their pace and in the comforts of their homes. Learners in this century learn everywhere with internet coverage via their smart phones and laptop computers. Traditional methods of teaching will no longer give satisfactory results (Alharthi et al, 2022). It is always essential to improve the education system more effectively by taking advantage of current practices (Alharthi *et al*, 2022).

The introduction and expansion of online learning platforms in Higher Institutions in Cameroon today have given rise to electronic mail, discussion boards, websites, search engines, online office hours via chat or web-conferencing, electronic submission of assignments, school portal, thus leading to high transformations in educational delivery and support processes in Higher Education Institutions in Cameroon (Haji, 2017). Online learning platforms (OLPs) have become increasingly important in Higher Education Institutions. Today's knowledge has a half-life that gets shorter all the time. As a result, teaching could be focused on collaboration, interactivity, and the promotion of learner-centered learning activities that promote their performance of better learning outcomes and make the learner feel more satisfied with their learning.

Online Learning Platforms allow instructors and learners to make class announcements, submit assignments, share instructional materials, deliver course content, reply promptly to emails, promote discussion among students, and online discussion forums, solve complex problems, construct collaborative knowledge and communicate with each other. It can be designed to supplement and facilitate instructional activities such as frequent posting to

discussion boards, analyzing and reporting skill gaps, tracking learners' progress, and delivery of course content that supports the learning process and enables communication among learners and between learners and the instructor, which may have a negative or positive impact on students' performance (Haji, 2017).

In this study, Online Learning Platforms refer to Google Classroom, Moodle, and Google Meet which use a local or wide area network or the internet to broadcast, interact or communicate, which includes distance learning, in a distributed environment, access to sources by downloading, or in consultation on the internet. It can involve synchronous or asynchronous, tutored systems, self-study-based systems, or a combination of the elements mentioned. Online Learning Platforms, therefore, result from the combination of interactive and multimedia content, distribution media (PC, Internet, Intranet, and Extranet), and a set of software tools that allow the management of online training and training creation tools interactive (Haji, 2019).

With the introduction of technologies over the world, learning is a critical support mechanism to enhance the knowledge and skills of learners and at the same time, it is useful for educational institutions (Lawyer, 2019). Online Learning Platforms are associated with any learning process that incorporated any form of technology. In addition, it can be considered as all activities utilizing information transfer and knowledge utilization during the learning process with particular attention to computer-based technology involving learning activities (Agbakwuru, et al, 2022).

Haji, (2021) opines that Online Learning Platforms result from the association of interactive and multimedia content with intranet/internet distribution media and a set of software tools for managing online training and tools for creating interactive training. Online Learning Platforms usage has grown a lot in Higher Institutions in Cameroon in recent years and is the subject of several changes. We can retain issues related to the efficiency and adaptability of learning processes; access to knowledge; learner autonomy; support for the learner; the new roles of the teacher and the development of educational technologies. To meet these needs, online learning platforms integrate design tools to produce diversified educational resources like courses, quizzes, discussions, exercises, and media (Yamani *et al*, 2022).

Google Classroom is part of Google Workspace developed by Google for schools in 2014 and has grown exponentially to become one of the most popular educational apps in the World. The main purpose of creating Google Classroom is to simplify sharing of files between teachers and students (Haji, 2022).

Yamanil *et al* 2022 opined that in an online learning platform, the instructors create standard courses, system content, interaction facilities, and user interface design and incorporate multimedia educational resources and track the activities of the students in the teaching-learning process. Students consult learning platforms to download educational content which have a view of the progress of their work, perform exercises, and self-assessments, and submit work to be corrected, while groups of lecturers and students communicate individually or in groups, create discussion topics and collaborate on joint work then, the administrator maintains the system, manages the accounts and user rights, creates links with external information. Thus, affects students' performance either negatively or positively in higher institutions in Cameroon.

It is on this note that the researcher deems it necessary to carry out research to determine the extent to which online learning platforms affect students' performance in higher institutions in Cameroon and the results from this study will hopefully be transformed into meaningful policies which if implemented, will help implemented to reduce the rate of class repetition and poor performance at the higher institutions, given that education is provided by three distinct providers, a study of social nature is essential in bringing out the factors of influence in various schools as well as witnesses to improve on schools' performances.

Background of the study

This will consider the historical, conceptual, contextual, and theoretical backgrounds.

Historical Background

The Cameroon Higher educational system has expanded over years, especially with the birth of State Universities in all ten regions of Cameroon including private universities and private higher institutions. This is due to the increased population, and increased participation by the school-age population and working population. In so far as University education in Cameroon is concerned, one Federal university, the University of Yaounde created in July 1962 (Tafah, 1989) served Cameroon until 1972. This was the only university created to tailor development for the country and equally make the country to be known academically in an international setting. Ahidjo (1964) opined that a university was to bring among others, rational development of teaching at all levels, science, and technology adopt the indigenous pattern of education than foreign, pursue vigorously and consolidate universities and the independence of Cameroon.

The Federal University started with a small enrolment of about 600 and a staff of 22 in all its three faculties, Letters and Human Sciences; Law and Economic Sciences; and Science. As time went on student enrolment increased substantially and the faculties could not accommodate the upsurge (Tafah, 1989). By 1970, the student enrolment was above 7 000, 18 000 by 1984, 32 000 by 1990, 45 000 by 1991, and more than 50 000 by 1992 with a staff of 537. This situation of exponential enrolment created a serious problem in the student-teacher ratio (34 to 1 by 1984 and 132 to 1 by 1991 in the faculty of Law and Economics) resulting in congested amphitheatres. This state of crowdedness brought in academic inefficiencies and other related ills like massive failures of 70% at each end of the year (UNESCO, 1984, Tafah, 1989). This deploring atmosphere of academic affairs for a country aspiring for economic growth and knowledge development could not be under-looked. To remedy the situation somehow, the Cameroon government 1981 created four university centers viz Dschang, specializing in Agriculture, Douala in Business and Commercial Studies, Ngaoundere in Food Technology, and Buea in Translation and Arts. By decree, N° 93/026 of 19th January 1993, reorganizing university education in Cameroon and the pursuit of academic excellence, the university of Yaounde was segmented into Yaounde 1 and 2 while the four university centers were raised into full-flesh universities. Then came the third-generation state universities of Maroua in 2008 and Bamenda in 2010, due to the continuous request for quality accessible higher education. In 2022, to further bring Higher education to the doorsteps of Cameroonians,

the Universities of Bertoua, Ebolowa, and Garoua were created by Presidential decree and has been a breakthrough for the promotion of quality assurance and good governance in higher education institutions found in all the ten regions of the country.

Higher Education has a significant role to play in this strategy; it has two major implications for policy change; firstly, it is a subject of administrative reforms and equally an agent of reform. Pekkola and Kivistö (2014) consider that the Higher Education sector is embedded within the broad administrative reform affecting public administration but because of its relevant role in society also constitutes an important element in the process of reforms based on its expertise in the knowledge base for policy development. Laure (2021) also stated that the knowledge and advanced skills necessary to develop a competitive prosperous and sustainable community lay in the hand of higher education thereby holding a preponderant position in the building of knowledge societies, especially in developing countries.

Tchinda (2007) documented an important text on Cameroon's online learning ambitions and advancement which traces the extent to which the country is involved and has evolved in ICT in terms of varied initiatives, projects, and experiments by the public and private sectors. The text points out, is an ongoing one with difficulties but excellent promise. Entitled “ICT in Education in Cameroon” is extracted and modified from the Survey of ICT in Education in Africa. Supported by infoDEV, it provides a country-specific inventory of the progress of ICT in different African countries and can be accessed at www.infodev.org/ict4edu-Africa. In the subtext, state policy on education, research, and training is once more reiterated:

Modernizing the educational system through the introduction of ICTs in schools, Introducing ICT application training modules into national universities, preparing a sectorial ICT policy for the educational sector, Training teachers in the use of ICTs, equipping all schools with ICT facilities, multiplying pedagogic resource centers for teachers and students, establishing distance training facilities and Providing support for the production of ICT teaching materials (“ICT in Education in Cameroon” 2007: (www.infodev.org/en/Document.390.pdf))

This was followed by a conference of ministers of higher education to work on strategies for implementing reforms and new technologies in university systems. There is no doubt that Cameroon has distinguished itself in attempting to materialize the use of online learning in its higher education sector.

Cameroon has multiple international affiliations in terms of bilateral and multilateral cooperation and she is a signatory to the 2005 “Libreville Declaration” which aimed at constructing a space for higher education, research, and professional training (Teke, 2012). Cameroon has ten state universities and several private universities and higher institutions. Each structure defines its specific and context-based online learning priorities within the general framework of the ministry's prescriptive line of action. The factors important in the implementation, integration, and updating of online learning are in line with innovation and obligations to modernize every aspect of higher education. The ministry has a budgetary line from which it gives subvention to both state and private structures with feasible projects in the domain of ICT.

As concerns students' performance, technological insertion, and advancement, these universities have recorded significant strides, though much still needs to be done. One can see the initiative of the university of Yaounde 1, to create online learning platforms with a repository site for a multiplicity of course contents, for both online and offline exploitation. The specific course here is Critical Theory and Practical Criticism in Literary Studies for Master II. It outlines the pedagogic implications of integrating ICT as an innovative technological approach to enhancing effective learning and research in the said domain (Teke, 2012). The ambition is to provide, foster and sustain new e-learning methodologies and techniques to improve teaching, learning, and research of credibility and quality. This lead to the creation of an online learning platform which is available at <http://elearning.uninet.cm/moodle/course/view.php?id=6>), (Teke, 2012).

The University of Buea and that of Bamenda are not left out, as there also created online learning platforms whose objectives are therefore to provide more learning materials to more students, provide programs to different target groups than campus students only, and start a reform process of education by providing the means to change from transfer-oriented concepts to study and learning concepts of education through the provision of e-learning materials. Also, it aims at providing quality e-pedagogic methodologies to a group of lecturers who in the long run are expected to continue the chain of training to make effective online learning and teaching in Yaounde 1 both to lecturers and students.

Conceptual Background

This talks about the main concepts used in the work.

Online Learning Platforms

Online Learning Platforms in this study, are web space or portal for educational content and resources that offer students everything they need in one place which may include lectures, resources, opportunities to meet and chat with other students and do more for creating and managing educational content and support materials for actors intended for three types of users: the teacher, the learner and the administrator and these Online Learning Platforms allow instructors and learners to make class announcements, submit assignments, share instructional materials, delivery of course content, replying promptly to email, promoting discussion among students, online discussion forums, solving complex problems, constructing collaborative knowledge and communicate with each other. It can be designed to supplement and facilitate instructional activities such as frequent posting to discussion boards, analyzing and reporting skill gaps, tracking learners' progress, and delivery of courses content that supports the learning process and enables communication among learners and between learners and the instructor, which may have a negative or positive impact on students' performance (Haji, 2017).

Google Classroom is part of Google Workspace developed by Google for schools in 2014 and has grown exponentially to become one of the most popular educational apps in the World (Haji, 2022).

The main purpose of creating Google Classroom is to simplify sharing files between teachers and students. Online learning platforms like Google Classroom integrate Calendar, Document, Gmail, Sheets, and Slides into a cohesive platform to manage students' and teachers' communication. Teachers can create, distribute and mark assignments within the Google environment. Tasks and due dates can be added to Google calendar; each task can belong to a particular topic. Teachers can monitor each student's progress by reviewing the revision history of the students. Teachers can help grade and can return students' work along with comments.

Google Classroom is considered one of the best platforms for enhancing teachers' workflow as it is easy to use, saves time, is cloud-based, flexible, accessible, and mobile-friendly, ensuring streamlined counseling only by posting an announcement and encouraging collaboration between students (Haji, 2022). Crawford (2015) opines that Google Classroom facilitates collaborative learning. Here, lectures can upload materials and can give feedback to students. Students also can upload materials and make personal comments. In addition, students can collaborate and can share their documents and assignment and thus produce the best assignment.

Sukmawat and Nensia (2019) state that, Google Classroom offers a platform of blended learning in schools to simplify creating assignments and getting the grade out to the students in a paperless way. With all the potential benefits it can bring, Google Classroom still has some drawbacks in its use.

Also, Google Meet is a safe application because Google has stated that they have made and operated all of their products on a safe foundation. So, they believe the data of their product users will exist and remain private. In their Google Meet product, Google also provides built-in protection by default that will keep users' meetings safe (St John, 2020).

In the literature, the terms instructor's presence and teaching presence have been used interchangeably. Instructor's presence according to Assogba and Note (2002) is seen as the instructor's involvement and communication style, as well as the regularity with which the instructor participates in class discussions and communications. Similarly, Ghaviffekr et al (2016) opined that an instructor's presence means 'posting often to the discussion boards, replying promptly to e-mail and assignments, and generally modeling excellent online communication and interactions'. Teaching presence is described as 'the design, facilitation, and direction of cognitive and social processes for the realization of personally meaningful and educationally worthwhile learning outcomes' in Anderson, Rourke, Garrison, and Archer's (2001) model of teaching presence.

Organizing the course, designing the curriculum, establishing time limitations, and laying out netiquette requirements are all parts of the instructional design component. Facilitating discourse entails recognizing areas of agreement and disagreement in students' talks' promoting and supporting students' contributions, establishing a learning climate, and promoting discussions. Direct instruction is concerned with delivering course content and conversation prompts, summarizing discussions, assessing and reinforcing students' understandings of important concepts, diagnosing students' misconceptions, offering information to students, and reacting to students' concerns.

Facilitation of conversation and teacher visibility, according to research, is critical for building an instructional online presence (Alkahtani, 2017, Habibou et al 2012, Godwyll & Malcolm, 2008). Similarly, it is widely agreed that it is the instructor's role to create a conducive environment for social contact, engage in dialogue with students, and deliver information (Ngoungou, 2017). While these characteristics of social presence are at the students' level, the

instructor can help students achieve the necessary level of participation and connection by demonstrating it (Habibou, *et al.* 2012).

Li, et al., (2005) discovered that, an instructor's assistance with students' discussions and conversations, as well as the quality of course design, were important for establishing a clear teaching presence in the online environment, and that this presence was positively related to students' perception of support and inclusiveness in the role of teaching presence in developing a learning community. Shea, et al. (2006) found a link between the instructor's presence and students' sense of community in the classroom. Despite the fact research had demonstrated that social and cognitive abilities are linked.

Students' Performance

Students' performance in this context, where the need for training is a lifelong feature, teaching must move beyond set contents to incorporate other crosscutting skills (Partnership for 21st Century Skills, 2005; European Commission, 2010). Apart from the students' subject-based knowledge, teachers must also emphasize what a student can do with what they know and mainly the resources and strategies that can be used to continue learning autonomously.

Learning today is not limited to face-to-face learning, since the advancement in technology, learning outside the classroom has been made possible. Students can choose face-to-face, E-learning, or both learning process. With the significant increase in Internet access and computers in and out of classrooms (Gray & Lewis, 2010), there are enormous options for learning to take place in and out of the classroom. The research on the effect of online learning on students' performance is increasing rapidly, but there seems to be much debate on whether or not online learning platforms have been making a significant impact on students' performance.

Based on research, online learning platforms in the classroom are being utilized to help students strengthen a certain set of skills needed to be useful in the 21st century, with equity and inclusion (Lawyer, 2019). Also, to permit students to learn both in and outside of a mortar classroom. Although these are only two key points out of many other reasons, to embrace using technology in the classroom, understanding the aspects and logistics surrounding this method of teaching is equally, if not more critical.

As higher institutions of learning have continued to embrace and expand the practice of online learning platforms in today's teaching, we have seen that teachers lack competences and

training on how best to integrate e-learning in their pedagogical practices (Bielefeldt & Moursund, 1999), while he acknowledged that the use of online learning platforms in higher institutions in Cameroon have provided students “considerable motivation to work and engage in learning” (Lockwood, 1998).

Contextual Background

Students’ performance in Higher education has to do with visibility in terms of distinguished students’ acquisition of quality skills, and knowledge attitude, which interns leads to students’ productivity, and creativity, as this is one of the Higher Education objectives (Oben, 2021). This can be seen with Laure (2021) who also stated that the knowledge and advanced skills necessary to develop competitive prosperous and sustainable communities lay in the hand of higher education thereby holding a preponderant position in the building of knowledge societies, especially in developing countries.

Cameroon's Higher Education ensures the empirical dimension concerning every structure of higher institutions. The engagement of national and international expertise, the building of staff and student capacities, the procuring of appropriate material and infrastructure, and the establishment of international cooperation in this domain are the primary concerns of the ministry (Kumar, Mahalakshmi, Radha, & Saravanakumar, 2020).

Higher Education in Cameroon has the responsibility to ensure that, the National Development Strategy 2020-2030 for structural transformation and inclusive development is attained, to meet vision 2035, based on its strategic position and aforementioned merits. Doh (2015) opined that, the stipulation of Law No. 005 of 16 April 2001 to Guide Higher Education in Cameroon is the current Higher Education Objective. These current missions and objectives, for Higher Education in Cameroon, are stipulated by the Ministry of Higher Education (MINESUP). There emanate from the laws N°. 98/004 of 4th April 1998 providing orientation of Education in Cameroon and law N°. 005 of 16th April 2001 to guide Higher Education following successive reforms (Tambo, 2003), and (Tchombe, 2001), Part 1, focuses on the General Provisions in which Article 2: of part 1 states that, higher education shall be assigned a basic mission of producing, organizing and disseminating scientific, cultural, professional and ethical knowledge for development purposes” (MINESUP, 2001).

As concerns Information and Communications Technologies, the Cameroonian government has put in place a strategy for conceiving and implementing efficient and reliable programs in all

state sectors, inscribed in a document entitled National Development Strategy on Information and Communication Technologies (2007). This text was enforced by the president of the Republic of Cameroon, HE President Paul Biya, and shows that the state prioritizes online learning in all spheres of political, economic, cultural, social, and educational life. In almost the speeches made by the President, HE Paul Biya strongly insist on Cameroon's active involvement in the wake of technological advancement in a rapidly changing world. He has placed the youths at the forefront of meeting these challenges, and the learning environment is a conducive sphere where they are impacted with knowledge to improve living conditions and competence within the global arena (Teke, 2012). The reality on the ground demonstrates that it is neither a political talk show nor a loud-sounding nothing, as this strategic plan for Cameroon National Information and Communication Infrastructure is still actual because it represents the fundamentals of ICT development of the country and embeds all the ICT initiatives the government is implementing incrementally since the early 2000s.

Higher Education has a significant role to play in this strategy it has two major implications in policy change; firstly, it is a subject of administrative reforms and equally an agent of reform. Pekkola and Kivistö (2014) consider that the Higher Education sector is embedded within the broad administrative reform affecting public administration but because of its relevant role in society also constitutes an important element in the process of reforms based on its expertise in the knowledge base for policy development. Laure (2021) also stated that the knowledge and advanced skills necessary to develop a competitive prosperous, and sustainable community lays in the hand of higher education thereby holding a preponderant position in the building of knowledge societies especially in developing countries.

Tchinda Jousué (2007) documented an important text on Cameroon's online learning ambitions and advancement which traces the extent to which the country is involved and has evolved in ICT in terms of varied initiatives, projects, and experiments by the public and private sectors. The text points out, is an ongoing one with difficulties but excellent promise. Entitled "ICT in Education in Cameroon" is extracted and modified from the Survey of ICT in Education in Africa. Supported by infoDEV, it provides a country-specific inventory of the progress of ICT in different African countries and can be accessed at www.infodev.org/ict4edu-Africa. In the subtext, state policy on education, research, and training is once more reiterated:

Modernizing the educational system through the introduction of ICTs in schools, Introducing ICT application training modules into national universities, preparing a sectorial ICT policy for

the educational sector, Training teachers in the use of ICTs, equipping all schools with ICT facilities, multiplying pedagogic resource centers for teachers and students, establishing distance training facilities and Providing support for the production of ICT teaching materials (“ICT in Education in Cameroon” 2007: (www.infodev.org/en/Document.390.pdf))

This was followed by a conference of ministers of higher education to work on strategies for implementing reforms and new technologies in university systems. There is no doubt that Cameroon has distinguished itself in attempting to materialize the use of online learning in its higher education sector.

The University of Yaounde 1, was created by Decree, No. 93/026 of 19th January 1993 following a university reform that split the country’s oldest University, the University of Yaounde, into two separate entities: The University of Yaounde 1 and the University of Yaounde II. Whilst Decree No. 93/027 of the same date, defined common conditions for the operation of the Universities of Cameroon, Degree No. 93/034, also of 19th January 1993, organized the University of Buea.

The above decrees introduce reforms aimed at increasing the participation of different stakeholders in financing higher education institutions, providing universities with more academic and management autonomy, providing all Cameroonians equal opportunity to obtain a university education, expanding and increasing higher education opportunities and making university programs, infrastructures, and services thus, aiming at improving the performance of higher education

Also, Decree No. 2010/371 of the 14th December 2010, led to the creation of the University of Bamenda (UBa) as a primary concern, to achieve the goals attributed to all the state Universities, like Teaching Research, before the current ones created in January 2022.

As concerns students’ performance, technological insertion, and advancement, these universities have recorded significant strides, though much still needs to be done. One can see the initiative of the university of Yaounde 1, to create online learning platforms with a repository site for a multiplicity of course contents, for both online and offline exploitation. The specific course here is Critical Theory and Practical Criticism in Literary Studies for Master II. It outlines the pedagogic implications of integrating ICT as an innovative technological approach to enhancing effective learning and research in the said domain (Teke, 2012). The ambition is to provide, foster and sustain new e-learning methodologies and techniques to

improve teaching, learning, and research of credibility and quality. This led to the creation of an online learning platform which is available at <http://elearning.uninet.cm/moodle/course/view.php?id=6>), (Teke, 2012).

The University of Buea and that of Bamenda are not left out, as they also created online learning platforms whose objectives are therefore to provide more learning materials to more students, provide programs to different target groups than campus students only, and start a reform process of education by providing the means to change from transfer-oriented concepts to study and learning concepts of education through the provision of e-learning materials. Also, it aims at providing quality e-pedagogic methodologies to a group of lecturers who in the long run are expected to continue the chain of training to make effective online learning and teaching in Yaounde 1 both to lecturers and students.

Also, the closure of all schools in the national territory by the Presidential order through the Prime Minister, Head of Government on Wednesday the 18th of March 2020 due to the outbreak of COVID-19, compelled higher institutions to continue studies online learning whereby, the Rector of the University of Yaounde 1 signed circular n° 20-321/UY1/CAB/R on the 6th March 2020 and n° 20-2639/UY1/CAB/R of 5th October 2020, which set out the bimodal or hybrid management of teaching activities the university. University of Buea were not left out as she also tailored learning via Google classroom, while Bamenda used Google classroom and Moodle online learning platforms to study mood to keep learning while staying safe.

The application of Online Learning Platforms in our higher institutions in Cameroon continues to provide new domains for research as technologies continue to evolve. ROCARE and PanAf are some groups of research networks in Africa, that have done a lot of work on the integration of ICT in education. They have done much work in this area in Cameroon and the African continent in general but the research thinks that there is the new technology in our higher education due to the constant changing and development of new technologies which call for new adaptations.

The learning technologies were introduced into all levels of education in Cameroon in 2001, with the hope to facilitate students' learning and to ease the work of instructors. But this transformational change has not received a favorable response due to low students' performance and limited competencies in online learning platforms. In other attempts to foster students' performance, the Minister of state, Minister of Higher Education, Prof. Jacques Fame Ndong, on the instruction of the Head of State, His Excellency Paul Biya, on July 27th, 2016, in

Yaounde, signed an agreement with a Chinese company, for the distribution of free 500,000 laptop computers to university students in the 2016/2017 academic year. The agreement with 75 billion FCA under the “E- Higher National Education” project is a presidential gesture that covers all registered students in state universities and private higher institutions in Cameroon. (Cameroon Tribune, No11146/7345, of Thursday 28th, 2016), and most Cameroonians welcomed such a gesture because it is a very huge investment in education. This one-to-one laptop gift will certainly reduce the digital gap but the question is, how effective will these laptops be used for instructional practices?

Even though out of the three Universities used in the study, the University of Yaounde 1, came as the first best University in the Francophonie countries in the 2021/2022 academic year, globally, it came 4095th position, while the University of Buea 3459th position and the University of Bamenda 6519th position of the World ranking of the top best Universities (Copyright 2012-2022 Center for World Universities Rankings).

Also, the Webometrics Ranking of the top100 best World Universities 2022 is available but Cameroon is one of the sub-Saharan African countries in this ranking, which evaluates the web content of universities worldwide, with only four best Universities in Cameroon which include: the University of Dschang, which points to the 64th place in these top 100, University of Yaounde 1 comes in 74th place, and finally the University of Buea and Ngaoundere, which are ranked 83rd and 96th respectively in this ranking (Cameroonlink. comAug9, 2022 9:08 am) meanwhile, the University of Bamenda did not even feature on the list. So, the researcher has concluded that instructors’ online presence, learning content, interaction, and perceived the use of these online learning platforms in Higher Institutions in Cameroon may have a considerable influence on students’ performance.

Theoretical background

Diffusion of innovation a theory propelled by Everett Rogers in 1962, is one of the oldest social science theories, which seeks to explain how, why, and at what rates new ideas and technology spread. Rogers' diffusion of innovation theory is the most appropriate for investigating the adoption of technology in higher education and educational environments. (Medlin, 2001, Parisot, 1995). For Rogers (2003), adoption is a decision -full use of an innovation as the best cause of action available and rejection is a decision -not to adopt an innovation. Rogers defines diffusion as the process in which, innovation is communicated through setting channels over time among members of a social system. As expressed in this definition, innovation,

communication channels, time, and social system are the four key components of the diffusion of innovation. This series, however, were developed at a time when learning was not impacted by technology. Over the last twenty-two years, technology has recognized how we live, how we communicate, and how we learn. Learning needs and stories that describe learning principles and processes should be reflective of underlying social environments. Vaill (1996), emphasizes that - learning must be a way of being - a set of attitudes and actions by individuals and groups that they employ to keep abreast of the surprising, novel, messy, obstructive, recurring events.

It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible. So, in this particular study, the theory guides how lecturers and students adopt the new idea of promoting the use of online learning platforms in Higher Institutions in Cameroon which will go a long way to fostering students' performance greatly.

Mayer (2010) concurs, the "Cognitive Theory of Multimedia Learning seeks to explain the processes that take place in the minds of learners during meaningful learning from multimedia instruction". Multimedia instruction can be displayed or projected in a classroom using a multimedia projector. Multimedia can be explained as the used of words and pictures (verbal and visual).

Mayer (2010) opines that, "the CTML theory has clear implications for instructional design to facilitate multimedia learning, in particular for how to avoid cognitive overload". Cognitive development helps teachers in selecting what to consider when planning a lesson instruction. (Mohamad, Tee, & Yee, 2017). Cognitive development enables teachers to identify learners' learning styles because it helps students actively construct their knowledge and build on prior knowledge.

Achievement goal theory was influenced by and grew out of three major motivational frameworks, namely, social-cognitive theory, the achievement motive tradition, and attribution theory. First and foremost, goal theory is a social-cognitive approach to motivation. It

recognizes and emphasizes the reciprocal influences of personal and environmental factors on goal endorsement, and underscores the importance of perception (Dweck & Leggett, 1988).

Traces of this theory can be seen in the early writings of all the major originators of goal theory (i.e., Ames, Dweck, Maehr, and Nicholls). Maehr and Nicholls (1980), for instance, discuss how expectations of future outcomes play a pivotal role in both theories. Ultimately, goal theory is a theory concerned with the source of attributional styles; it is a theory governed by a quest to identify why students, often of equal academic ability, respond so differently to the same academic task. Why, for example, do some students exhibit what Dweck and her colleagues called a “helpless” orientation while others display a “mastery” orientation (Dweck & Leggett, 1988; Elliott & Dweck, 1988)? When faced with an academic task, why do some students make more ability attributions (e.g., “was I smart?”) than effort (e.g., “did I try hard?”) attributions (Ames, 1984)? The answer, according to goal theory, is the two primary goals of mastery and performance. Nevertheless, questions remain and differing opinions exist about the nature and origins of these goals.

Social presence theory has been around long before the popularity of online courses and the widespread of computers. Social presence theory was originated by Short, et al (1976) who studied face-to-face, audio, and closed-circuit television encounters. It was not originally for learning digitally. Short, et al define social presence theory as: “the degree of salience of the other person and the interaction and consequent salience of the interpersonal relationships” and “the ability communication media have to transmit social cues” (Short, 1976). The social presence factor was defined by hot-cold, humanizing, dehumanizing, and sensitive-insensitive factors. Social presence is the relationship between interactive use and personal identity. Short, Williams, and Christie created the social presence theory on two concepts by other researchers.

Intimacy- “A sense of belonging and closeness- “physical distance, eye contact, smiling, body language, and how we interpret non-verbal cues” (Argyle & Dean 1965).

Immediacy- the urgency to connect shows the importance and closeness to the relationship (Wiener & Mehrabian, 1968).

In this study, the theory will be used to explain why the role of the instructor is important to create an online learning environment where students have a perceived social presence in the classroom. When communicating online, if there is a lack of verbal cues, it can cause an impersonal feeling (Walther, 1996). Higher levels of frustration and low level of affective learning will be the outcome if there is a lack of social presence (Rifkind, 1992). This theory

will help this study to focus on the role of the instructor and the importance of creating a social presence environment in online classrooms.

Also, the theory will help the study to explain how Students' perceptions of their online learning environment and their peers and their human qualities depend on the environment that the teacher creates (Gunawardena, 1995). The degree how which the instructor projects themselves in an online communication environment and provides multiple avenues to build interaction among students and create a strong classroom community (Garrison, 1997). Instructional effectiveness is improved due to social presence which makes it one of the most significant factors in distance education (Tu, 2002).

These theories, therefore, will explain the need for the application of online learning and also give rise to deductions (good problems) which will be tested, and lead to the refinement and extension of the listed series above, which will make the research great significance.

Statement of the Problem

The product of teaching is learning, and it is through the learners'/students' behavior or performance/output that, one can state or determine whether learning has occurred or not. It is observed by the researcher that, most learners in higher institutions in Cameroon today, perform poorly in terms of low-quality output and digitalization, due to the country's present static system of education. The system's inability to fully embrace digital technology has placed learners/students, and staff at a crossroads. Covid-19 spur the unprecedented start of online studies in these universities, but the programs remained adapted for the traditional classrooms. The courses were unavailable online, the quality of the content, inflexible interaction between students and lecturers and lack of perceive use ONLPs by students in the online lessons. Online learning platform usage is widely spreading in universities around the world in our digital society, as higher institutions are practicing this mode of teaching to meet up with the global trends of technologies. To equip students with 21st-century skills, which are in line with NDS 2020-2030 vision 2030, Kinsley & Boom (2008) opined that, evidence exists that available OLPs are likely to yield significant positive effects on students' performance as they work independently on their computers, as measured by a standard multiple-choice test. Also, Beche (2012) and Haji (2021), opined that digital technologies would transform the way education is being delivered and supported. They suggested that applications, which will enable real-time students' feedback, would continue to breach the gap between online and face interaction while increasing students' performance in higher institutions.

As observed by the researcher, the webometrics Ranking of the top 100 best World Universities for 2022 is available, but Cameroon is one of the sub-Saharan African countries in this ranking, which evaluates the web content of universities worldwide, with only four best Universities in Cameroon which include: the University of Dschang, which points to the 64th place in these top 100, the University of Yaounde 1 comes in 74th place, and finally the University of Buea and Ngaoundere, which are ranked 83rd and 96th respectively in this ranking (Cameroonlink.comAug9, 2022 9:08 am) meanwhile, the University of Bamenda did not even feature on the list.

As observed, many students in Higher Institutions in Cameroon are not able to participate in online classes nor submit online assignments. The student's role in the OLP is important on many levels and for any of them to benefit from using the OLP, the student must have an active role when interacting with the OLP systems and seek to learn through engagement in online and not passively absorb information (Halverson & Graham, 2019; Ouyang & Chang, 2019).

Students, who engage in large amounts of interaction with course content, using extra learning materials and resources to supplement classes, do so to support work with assignments (Shah & Barkas, 2018). OLPs make it easy to incorporate, disseminate and organize a vast collection of educational resources (Chang & Ouyang, 2019). Shelton et al., 2017) confirmed that login frequency and students' behavior towards regular study had a significant effect on students' performance.

So, one can bear with the researcher that, more efforts have to be put into our Higher Institutions in Cameroon to produce graduates with high skills which will go a long way to improve their performance positively and this can be done with the implementation of online learning platforms in all the state Universities in our country. It is in this light that the researcher aimed at carrying out an investigation on the effect of online learning platforms on students' Performance in Higher Institutions in Cameroon.

Research Objectives

1. To examine how instructor's online presence affects students' performance in higher institutions.
2. To investigate on how learning content in online learning platforms affects students' performance.
3. To examine how interaction in online learning platforms affects students' performance in Higher Institutions in Cameroon.

4. To establish how user interface design in online learning platforms affects students' performance.

Research Questions

1. To what extent does an instructor's online presence in online learning platforms influence students' performance in Higher Institutions?
2. To what extent does learning content in online learning platforms enhances students' performance in Higher Institutions in Cameroon?
3. How does interaction in online learning platforms affect students' performance in Higher Institutions in Cameroon?
4. To what extent does Perceive Use of online learning platforms enhance students' performance in Higher Institutions in Cameroon?

Research Hypotheses

The research questions formulated to address the effect of online learning platforms on students' performance, brought about the following hypotheses of the study.

H₀₁: Instructor's online presence in online learning platforms does not statistically affect students' performance in Higher Institutions.

H₀₃: Learning content in online learning does not statistically influence students' performance.

H₀₃: Interaction in online learning platforms does not statistically influence students' performance in Higher Institutions in Cameroon.

H₀₄: Perceive Use of online learning platforms does not statistically influence students' Performance in Higher Institutions in Cameroon.

Significance of the Study

The findings of this research have deep significance for the enhancement of online learning by prioritizing inside and outside of students' performance in higher institutions of the study areas in particular and Cameroon as a whole. Specifically, the result of this research has the following importance on the students, teachers (lecturers), higher institutions, and the state of Cameroon.

Significance of this study to the Students

Personalizing learning by building on student interests, can result in increased student motivation, and time on task, and ultimately better students' performance positively and making

better use of teacher and student time by automating routine tasks and enabling teacher time to focus on high-value activities.

Significance of this study to Higher Institutions

Draft policies and curricula that will favor the creation of a healthy Instructor's online presence, learning content, interaction, and perceived use, organize workshops to train staff on course content, and teaching style, to ensure the development of good performance skills by graduates and hence promote their successful integration into the job market, Ensure that educators who instruct using online learning platforms receive comprehensive preparation for this medium by organizing workshops and seminars to provide professional development opportunities for online learning teachers, Develop language for determining the intellectual property rights of online learning courses, Allow educators adequate preparation time for the development and delivery of online learning platforms courses.

Also, to ensure educators have the technical infrastructure and technical support before initiating online learning platforms education, Develop accountability mechanisms that assume instruction may occur beyond the normal school building or normal school hours, Provide Wifi connection in all the state University campuses so that students can have access to an internet connection for their online learning and Subsidize monthly premium on Wifi services so that most students can afford Wifi services in and out of the campus.

Significance of this study to the State of Cameroon

Adopt policies that reflect teaching and learning that may occur beyond the normal school building walls, Develop teachers' accreditation program criteria and teacher licensure criteria that ensure some pre-service preparation for instructing through online learning platforms, Ensure that state licensure requirements accommodate online learning courses that may be taught by licensed out-of-state educators, Expand professional development programs to prepare a cadre of educators who can effectively instruct online learning.

Develop state policy for determining the quality and acceptability of online learning programs and Grant scholarships to the top best students in all the state Universities in Cameroon. So that these students can study abroad to learn more skills which will go along increase competition among students thus, leading to students' performance.

Justification of the study

The officially confirmed and announced death of more than 320 and almost 15000 cases as of 6th July 2020 of the Coronavirus Statistics COVID-19-2020, Cameroon was among the most

COVID-19 affected countries in sub-Saharan Africa. According to Routley (2020), Cameroon as of 2020, was the country with the highest weekly coronavirus infection rate in the world, with (12%). This spread of covid-19 in Cameroon, which started on the 6th of March, 2020, affected the educational family greatly. So, education has been at the heart of the government's strategy for responding to the COVID-19 pandemic. The strategy set out by the Prime Minister on the 17th of March 2020, placed education as a top priority, which schools and universities were ordered to lock down, and face-to-face academic activities were suspended to compensate for the cessation of face-to-face teaching, the Government recommended that schools and university administrators should priorities the use of distance communication tools for meetings, seminars, and conferences. The paralysis of the education sector caused by the onset of the covid-19 pandemic, occurring in the middle of the academic year, meant that all Cameroonian learners were suddenly temporarily out of school (4.5million in primary schools, 1.8million in secondary schools, 40.000 learners in vocational training, and 347000 in higher education, UNSDG, (2020). So, the use of online learning platforms in higher education in the year 2000 (Barhoumi, 2015) may go a long way to boost students' performance.

Students' performance in Higher has to do with higher education visibility in terms of distinguished students' acquisition of quality skills, and knowledge attitude, which interns leads to students' productivity, and creativity, as this is one of the Higher Education objectives (Oben, 2021). This can be seen with Laure (2021) who also stated that the knowledge and advanced skills necessary to develop competitive prosperous, and sustainable communities lay in the hand of higher education thereby holding a preponderant position in the building of knowledge societies, especially in developing countries.

During the training program from critical observation, experiences, and analysis of students' results in some courses from 2020 to 2022, the researcher discovered a problem with the students' performance from online learning platforms. This was explained by some factors such as students' performance, and extraneous variables observed and explained above. The analysis of students' results in some online learning platforms courses from 2020 to 2022 is presented below.

Table 1: Masters Results of Students in some courses from 2020 to 2022.

Performance	Grade	Number of grades	Percentage
Excellent/Very good	A and A+	186	56.9
Very good	B- and B+	111	33.9
Average	C- and C+	28	8.6
Poor	E- and D+	2	.6
Very poor	F	None	0
Total		327	100

Source: Field Work 2022.

From the table above, we can see that the excellent/Very good performance was 186, with A and A+ grades making 56.9%, Good performance was 111, B and B+ grades making 33.9%, average performance was 28, C- and C+ grades making 8.6%, poor performance was 2 E- and D+ grades making 8.6%, very poor performance were zero making zero. From this result, we can say that results with recommendable and encouraging technical skills in their students' performance (excellent and very good) were 186 making a percentage of 56.9% which was good as per the availability of resources in this institution. Poor students' performance ranges from average to very poor performance making 9.2%. This shows a very big gap that has to be filled through many research works to identify and solve the problem of poor students' performance among masters' students in the Faculty of Education of the University of Bamenda, University of Buea, and University of Yaounde 1, and other higher institutions of learning in Cameroon. The current problem of poor students' performance among masters' students, has many consequences some of which include wastage of resources and time on the part of the students, low income earned due to low skills acquired, wastage of material, human and financial resources on the part of the institution, lack of required skills for the emergence of Cameroon by 2035 and making the society to remain under developed. The solution to the problem identified above as poor student performance among masters' students undergoing online learning platforms can be properly solved through thorough research and application of its results.

There was the need to address the poor students' performance from online learning platforms since it was what is practiced in these institutions, this was why the researcher came out with the research topic of the effect of online learning platforms on students' performance in higher institutions in Cameroon. Thus, this study as focused on Online Learning Platforms in higher education in Cameroon and on graduate students was aimed at establishing the following:

Online Learning Platforms allow instructors and learners to make class announcements, submit assignments, share instructional materials, delivery course content, reply promptly to emails, promote discussion among students, and online discussion forums, solve complex problems, construct collaborative knowledge, and communicate with each other. It can be designed to supplement and facilitate instructional activities such as frequent posting to discussion boards, analyzing and reporting skill gaps, tracking learners' progress, and delivery of courses content that supports the learning process and enables communication among learners and between learners and the instructor, which may have a negative or positive impact on students' performance (Haji, 2021).

Instructor's online presence involves frequent postings, prompt replies to email expository, active and interactive methods, and students' performance. This shows those teachers who highly achieve their objectives practice the interactive approach, those who moderately achieve their objectives using the active approach, those who lowly achieve their objectives practice the expository approach, and the best teachers are those who use the three approaches in solving problems.

Learning content here involves posting content related to objectives, teaching methods employed by instructors, and students' performance. This shows how the teachers use communication synchronicity to communicate in real-time like live chat, audio and video conferencing, shared whiteboard, multimedia presentations, and online learning platforms slide shows, or communicate in time-delayed capacities like e-mail, threaded discussion, newsgroups and file attachments.

So, since there exist no factual data concerning students' performance in Cameroon in terms of students' publication of articles, the number of postgraduate/master's students who are admitted each year into the Ph.D. programs, and those best students were given scholarships to study abroad by the Government, the researcher had to use the students' actual grades to represent their performance in this study, to make it scientific.

Scope of the study

The scope of the study was identified to be time, geographical, and content or thematic-wise.

The Time Scope

This work was carried out for six months between March and July 2022. The period was deemed necessary for the topic of the study 'The effect of online learning platforms on students'

performance in higher institutions of learning in Cameroon''. This was because the period was the period when schools were still going.

The Geographical Scope

The scope of this study was delimited to Online learning platforms from Master's one & two students in the Faculty of Education, at the University of Bamenda, University of Buea, and University of Yaounde 1. This was limited only to state Universities that offer Faculty of Education at the Master's level. Therefore, the finding of this research was generalized to online learning platforms for students of the higher institutions of the study area and Cameroon in general.

The Thematic or Content Scope

This study focused on the following variables;

Online learning platforms (OLPs), Instructor's online Presence (IOP), Learning content (LC), Interaction (Int.), Perceived use (PU).

Students' performance

Students' performance in this study has to do with Students' productivity, Knowledge acquisition, Skills, Critical thinking, Creativity, Problem-solving, Collaboration, Communication, and Global citizenship.

Extraneous variables

This includes the Name of the Institution, Name of the Faculty, Name of the Department, Gender, Age, Class, and Online learning platforms used in schools.

Operational definition of key terms

The terms that were identified to be defined in this study include are based on the effect of online learning platforms on Students' performance defined as follows:

Online Learning Platforms

Online Learning Platforms are web spaces or portals used for educational content and resources that offers instructors and learners to make class announcements, submit assignments, share instructional materials, deliver course content, reply promptly to emails, promote discussion among students, online discussion forums, solving complex problems, constructing collaborative knowledge and communicate with each other. It can be designed to supplement

and facilitate instructional activities such as frequent posting to discussion boards, analyzing and reporting skill gaps, tracking learners' progress, and delivery of courses content that supports the learning process and enables communication among learners and between learners and the instructor, which may have a negative or positive impact on students' performance (Haji, 2017).

Instructor's Online Presence

Instructor's presence according to Assogba and Note (2002) is seen as the instructor's involvement and communication style, as well as the regularity with which the instructor participates in class discussions and communications. Similarly, Ghaviffekr et al (2016) opined that an instructor's presence means 'posting often to the discussion boards, replying promptly to e-mail and assignments, and generally modeling excellent online communication and interactions.

Learning Content

Content refers to the ability to design and delivering of materials such as slides, videos, and blogs, creating a chat room, to realize didactic objectives.

Farrant (1964), opined that content refers to facts, principles, rules, or information. Master content entails the lecturers using learning management platforms in Higher Education to have maximum effect to know their learners and content material should match their cognitive and technological levels.

Interaction

According to (Moore, 1989) the concept of interaction includes the learner's engagement with the course content, other students, the instructor, and the technical medium employed in the course, making contributions to lessons by posting messages on discussion boards, and solving complex problems.

Perceived use

This describes the degree to which students believe that online learning platforms will be free of effort.

Students' Performance

Students' performances describe what students can demonstrate in terms of knowledge, skills, creativity, critical thinking, problem-solving, collaboration, communication, and global citizenship.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This work seeks to investigate the Effect of Online Learning Platforms on students' performance in Higher Institutions in Cameroon. This chapter deals with some related literature to the study; the importance of online learning platforms in Higher Institutions, the difficulties of implementing Online Learning Platforms in higher Institutions, and the theoretical framework.

Conceptual Framework

A conceptual framework is a structure of what has been learned to best explain the natural progression of a phenomenon that is been studied (Camp, 2001). According to Miles and Huberman (1994), the conceptual framework is a vital or written product that explains either geographically or normatively the main things under study. They include key concepts, factors, or variables and presumed relationships that exist among them. In this study, we shall focalize our interest in online learning platforms and students' performance as an independent and dependent variable respectively.

Online Learning platforms

The Online Learning Platform is a web space or portal for educational content and resources that offer a student everything they need in one place which may include lectures, resources, opportunities to meet and chat with other students and do more for creating and managing educational content and support materials for actors intended for three types of users: the teacher, the learner, and the administrator

Online Learning Platforms refer to the use of Google Classroom, Moodle, and Google Meet which uses a local or wide area network or the internet to broadcast, interact or communicate with the instructors, content, and learners during online teaching (Ramadani, 2021).

Online Learning Platforms allow instructors and learners to make class announcements, submit assignments, share instructional materials, deliver course content, reply promptly to emails, promote discussion among students, and online discussion forums, solve complex problems, construct collaborative knowledge and communicate with each other. It can be designed to supplement and facilitate instructional activities such as frequent posting to discussion boards, analyzing and reporting skill gaps, tracking learners' progress, and delivery of courses content that supports the learning process and enables communication among learners and between

learners and the instructor, which may have a negative or positive impact on students' performance (Haji, 2017).

Kejriwal (2022) opined that OLPs incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers. OLPs are also called Web-based learning, online learning, distributed learning, computer-assisted instruction, or Internet-based learning. Online learning is "the wide set of applications and processes which use available electronic media and tools to deliver vocational education and training". OLPs are "the use of various technological tools that are web-based, web distributed, or web capable for education" (Albraa, Alqahtani & Rajkhan, 2020). The online learning platform is based on using Information and Communication Technologies (ICT) to enhance educational operations.

Online learning is the use of new multimedia technologies and the Internet, to improve the quality of learning by facilitating access to resources and services, as well as exchanges and collaboration remotely. Online learning refers to anything that uses a local or wide area network or the internet to broadcast, interact or communicate, which includes distance learning, in a distributed environment, and access to sources by downloading or in consultation on the internet. It can involve synchronous or asynchronous, tutored systems, self-study-based systems, or a combination of the elements mentioned.

Online learning, therefore, results from the combination of interactive and multimedia content, distribution media (PC, Internet, Intranet, and Extranet), and a set of software tools that allow the management of online training and training creation tools interactive. The access to resources is thus considerably extended, also the possibilities for collaboration and interactivity. Online learning platforms result from the association of interactive and multimedia content with intranet/internet distribution media and a set of software tools for managing online training and tools for creating interactive training (Alharthi, Smirani, & Yamani, 2022).

Franklin (2008) observed that online learning platforms are the adoption of electronic media to facilitate teaching and learning. It uses technology to deliver information embedded in educational material to learners situated in diverse geographical areas. Online learning platforms are substitute methods for teaching and learning. It veers away from conventional classroom lectures (Herrington *et al.*, 2010). Alavi & Leidner (2001) viewed online learning platforms as a virtual learning environment where different forms of information technologies are used to mediate between the learner and the instructor. Online learning platforms attempt

to shift the focus of the educational environment away from the physical teacher-student environment while disseminating information. Without regard to distance, instructors utilize new and improved web-based technologies to plan and structure teaching materials (Clark & Mayer, 2008). According to these authors, online learners are subjected to more critical challenges when compared to conventional learners. This is so because the efforts which should have been put in by instructors in motivating and instilling discipline in learners are transferred to the online learner in an online learning setting. As stated succinctly, the responsibility of inspiring and encouraging discipline is transferred from the conventional lecture-bearing instructor to the learner himself (Liaw, 2008). With online learning platforms, students are themselves managers and students. They actively manage their learning process while the instructor sets the guidelines (Downes, 2005). According to Najim (2020), the term online learning platforms can be used to refer to a wide range of programs that use the Internet to provide instructional materials and facilitate interactions between teachers and students and in some cases among students as well. Online learning platforms can be fully E-learning, with all instruction taking place through the Internet, or E-learning elements can be combined with face-to-face interactions in what is known as blended learning (Horn & Staker 2010). An online learning platform is a platform for delivering educational content and facilitating instructor-student interaction over a computer network (Shelton & Saltsman, 2005).

The online learning platform is described by most authors as access According to Najim (2020). Zare (2016), sees E-learning as a system based on technology, organization, and management that bestows upon the students the ability to learn via the Internet and facilitates their learning. The online learning platform is an integral part of the learning process. Online learning is defined as the acquisition of knowledge through online or offline modes. In the process of online learning platforms, technological gadgets are used to receive information. Online learning platform offers various teaching styles as synchronous, asynchronous and reduces cost, and saves time, the student can learn anywhere outside the classroom, overcomes the problem of faculty shortcomings and ultimately transforms student into an active learner, (Bana, 2021).

Online learning platforms facilitate the process of learning by increasing the accessibility and availability of learning materials, up-to-date content, personalized instructions, cost-effectiveness, self-paced learning, multimedia, and interactivity. There plays a vital role to convert an organization into a learning organization; moreover, it is accelerated in higher education institutes to support effective learning in the context of lifelong learning (Wong & Huang, 2015)

Online learning platforms have become a popular tool that is well received by 21st-century learners. Kasworm (2011) agreed that their learning allows flexibility in learning and accessing materials according to students' needs and provides more interactive materials that allow easy access to information and feedback from students. Presently, some universities have integrated online learning platforms into their teaching to accommodate the diverse need in learning (Turney *et al*, 2009). Online learning platforms enable students to study under the guidance of their teachers as their mentors whether in campus-based or distance learning systems.

Apart from providing virtual education, Online learning platforms can be used to improve classroom learning processes as well as blended learning. The application of ICT in traditional systems is bound to have a significant impact on the overall education system by enhancing the accessibility of adverse education opportunities and improving its qualities within minimum costs. For maximum benefits of online learning platforms, at minimum costs, proper policies and strategies must be implemented to integrate the available local technologies with the current education system. To meet the increased demand for flexible learning systems in the local and international market today, the University Grants Commission (UGC) in India has resolved to take advantage of ICTs to improve virtual education through online learning platforms in most of its institutions of higher learning. This calls for the development and implementation of a well-designed online learning platform learning plan both at the national level as well as the institutional level. Online learning platforms are described by most authors as access to learning experiences through the use of some technology (Benson, 2002, Carliner, 2004, Conrad, 2002). For this study, online learning platforms are the process of using web space like Google Classroom, and Google Meets to facilitate online learning in high education.

Instructors' Online Presence

Learners in online learning platforms environments seem to perform highly when they received support from their instructors that match their expectations of communicating with their instructors. Supporting the frequency of contact between the students and the instructors, having a regular presence in class discussions, and making expectations clear to learners are three practices suggested for instructors to adopt in enhancing learner-instructor interaction during learning (Darabi, Dennen, & Smith, 2007). The responsibilities between instructors and students exist within the context of designing educational resources on the instructors' side, and the utilization of the prepared educational resources on the students' side. The instructor and

student enrich and maintain all forms of interactivity, which are eventually revealed in the learning potential which students accomplish.

During the teaching-learning process, students may face problems that need the instructor's attention. Also, in an online learning platform setting, the instructors assume a scaffolding role that facilitates and enable students learning. The instructors ask questions about ideas so that students can explicitly explore their thoughts. Thus, interactivity is critical in an online learning platform class, where the instructors need to follow and observe all of the discussions involved to provide immediate feedback. Students may find some difficulties in understanding a particular topic, which may require clarification from the instructor. Bowman (2001) states that in such situations the instructor should resolve all doubts and keep on asking further questions to encourage more in-depth reflection while maintaining the discussion and interaction on track. Such undertakings are likely to promote students to generate a repertoire of scientific ideas (Eylon & Linn, 2011). Thus, the instructor's communication style, frequent postings to discussion boards, promoting discussions among students, delivering course content promptly to students, and engagement in dialogue with students may affect their performance positively and vice versa.

Learning Content in online learning platforms

Learner-content interaction will determine learners' frequent use of online learning platform features. An online learning platform is a comprehensive, integrated software that supports the development, delivery, administration, documentation, monitoring, reporting, and assessment of courses in traditional face-to-face, blended, or online learning environments (Wright et al. 2014, Bailey Costley, Haji & Southam, 2021). With help of OLPs, instructors plan, design and deliver educational materials to their students (Graham & Halverson, 2019). Also, OLP offers a range of opportunities for the three types of learner interactions such as chat rooms, online discussion forums, and email communications for students during online learning (Deursen et al., 2015). The student's role in the OLP is important on many levels and for any of them to benefit from using the platforms, the student must have an active role when interacting with the OLP systems and seek to learn through engagement online and not passively absorb information (Graham Halverson, 2019, Chang & Ouyang, 2019).

OLPs can increase learner engagement and learner efficacy through rich discussion topics and well-planned activities that help students interact and gain knowledge (Johnson & Quayle, 2016). Online Learning Platforms offer content such as slides, videos, blogs, and other

resources designed to support existing course content (Eirini, 2015). Students who engage in large amounts of interaction with course content, using extra learning materials and resources to supplement classes, do so to support work with assignments (Barkas & Shah, 2018).

OLPs make it easy to incorporate and disseminate and organize a vast collection of educational resources (Chang & Ouyang, 2019). In a study by Murray et al. (2012) that examined the patterns of interaction with online course contents through OLPs, it was discovered that students carefully access content based on the level to which they think it will help their performance and grades. (Jo et al., 2015, Shelton et al., 2017) that confirmed login frequency and students' behavior toward regular study had a significant effect on students' performance.

Moore & Kearsley (2005) opined that learning content is merely the subject matter that is to be learned. Content can be either external (for instance a student learning the principle of instructional design) or internal to the student (for example a student examining his or her assumptions about a subject matter). Students use different ways of learning these resources to achieve their learning needs (Hill et al., 2009). This interaction allows students to engage in learning to construct a new learning experience (Navarro & Shoemaker, 2000). The availability of different types of teaching materials such as text, simulations, audio/visual content, and video content is likely to motivate students in their learning.

Well-designed learning content and instructional materials help to improve the interactions between the instructor and students, and among students. Nowadays, the use of online learning platforms (OLPs) has made it easy to incorporate and disseminate a vast collection of educational resources. Geist, Hedrick, Pérez & Murray, (2012) found that students with the highest access rates to instructional materials are also the highest achievers. Their findings are also in line with Crampton, Ragusa, & Cavanagh's (2012) findings that students with greater access to course content regarding diversity and percentage of available materials achieved a higher grade. However, researchers like Stewart, Stott, and Nuttall (2011) found that students accessed stored learning materials to help them with assignments, not weekly to supplement lectures. A similar study, by Murray et al. (2012), also found that students tend to access only well-designed instructional materials help to improve the interactions between the instructor and students, and among students.

Interaction/collaboration

Interaction in a web system such as OLP is based on instructional material and can be face-to-face or online (Ziraba, 2021). Haji, (2022) opined that Communication, collaboration, and

active learning are the dimensions that make up the concept of interaction. According to (Moore, 1989) the concept of interaction includes the learner's engagement with the course content, other students, the instructor, and the technical medium employed in the course. Given that interaction among learners, instructors, and content occur in all types and levels of education, regardless of delivery method, understanding these interactions and finding ways to support such interactions are essential (Haji, 2021).

Furthermore, Tang & Lam (2014) researched the effectiveness of online discussion boards as a way to build a collaborative learning community and found that they can promote online interaction, specifically during collaborative activities. The more messages that the students posted on discussion boards, the higher levels of achievement they reached in the course (Singh & Yu, 2018). The essence of interactive learning is that the content is organized in such a way that almost all students are involved in the learning process, they have the opportunity to understand and reflect on what they know and think. The joint activity of students in the process of learning, and mastering the educational material means that everyone makes their own special individual contribution, there is an exchange of knowledge, ideas, and ways of acting. Also, this happens in an atmosphere of goodwill and mutual support, which allows not only to receive new knowledge but also develops cognitive activity itself, and transfers it to higher forms of cooperation and cooperation.

Interactive activity in online learning platforms involves the organization and development of content material, which leads to mutual understanding, and interaction, to the joint solution of common, but significant tasks for each participant. During interactive learning, students will learn to think critically, solve complex problems based on the analysis of circumstances and relevant information, weigh alternative opinions, make thoughtful decisions, participate in discussions, and communicate with other people (Ramzitdinovna, 2022).

One of the key factors in student performance is the frequency of contact between the students and the instructors (Shelton et al., 2017). Kang and Im (2013) found that out of five types of the learner to instructor interactions, "presence of instructor" and "instructional communication" had the most significant impact on students' performance. However, other research into learner-instructor interaction has shown that there may be some situations where it does not facilitate students' performance (Dunlap & Lowenthal, 2018, Oyarzunet al., 2018).

As observed, greater amounts of learner-learner interaction online lead to more effective learning overall (Kara, 2020, Oyarzunet al., 2018). Student levels of social participation in

online discussions are indicators of their levels of cognitive engagement, pointing to a significant relationship between students' participation levels online thus, affecting performance (Ouyang & Chang, 2019). For this reason, learning situations should create opportunities for students to construct knowledge collaboratively and engage in learner-learner interaction (Birkun & Frolova, 2019). Contrary to this, there exists some research that shows that the benefits of learner-learner interaction might be overestimated (Oyarzun *et al.*, 2018). When students are forced to interact too much with each other, interaction may decrease student performance (Oyarzun *et al.*, 2018, Kuo *et al.*, 2014). Students who are asked to participate in group work sometimes believe the interaction with each other is "busy work", which leads to frustration and overload (Kuo *et al.*, 2014). It has also been reported that students who are not forced to interact with peers are more satisfied with their courses and that learner-learner interaction does not affect their performance (Bray *et al.*, 2008)

Online Learning platforms were built specifically to be an interactive learning management system that allows students to communicate with one another, with instructors, with content, and with the software (interface). Both traditional classrooms and web-based courses have to be learner-learner, learner-instructor, and learner-content instructions. The learner interface is entirely reliant on the courses available through the web Learning Management System, and it can have a significant effect on students' ability to learn the material.

Interaction is an essential component of education. Given that interaction among learners, instructors, and content occur in all types of education, regardless of delivery method, it is expected that many have emphasized the importance of interaction in education (Kuo, Walker, Schroder, & Belland, 2014). Fewer studies of interaction have been conducted to investigate factors that may influence learners' satisfaction and perceived learning outcomes in distance education (Haji, 2022). The number of learners' interactions with content, instructors, and other learners was positively associated with how satisfied they felt and how much they thought they had learned (Swan, 2001). Hence, fewer studies have examined the roles of different types of interaction and how the use of OLPs can mediate between interactions and perceived learning outcomes and satisfaction in Higher Education in Cameroon.

Interaction is vital in all forms of education, regardless of whether technology is involved or not (Moore & Kearsley, 1996). Interaction has been identified as a critical constituent of the educational process (Anderson, 2003). Interaction is an essential part of the learning process, whereby instructors, students, and the learning content share a common learning environment.

Interaction also plays a significant role in defining the effectiveness and quality of education and allows individuals to share information, receive feedback, and more readily evaluate progress (Ahmad, & Ives, Piccoli, 2001). The interactions within these learning activities indicate to what extent, the learners could acquire the knowledge (Moore 1989).

Moore (2002) stated that interaction encouraged by the instructor and the provision of immediate feedback was linked to students' perceived course performance. Lynch (2002) indicated four principles of instructor effectiveness that are directly related to students' performance. The instructors must: (1) provide positive feedback to reward students' accomplishments, (2) inculcate real-world skills and knowledge in students, (3) Provide up-to-date grades to reinforce student learning, and (4) share students' excellent work with others. These principles involve student-instructor, student-content, and student-student interaction.

Moore's interaction model still, dominates interaction in learning environments (Bray et al., 2008, Northrup et al., 2002). In the present study, the researcher adopted the effect of online learning platforms on students' performance as a subjective perception, that is, the degree of students' performance is based on how favorably they think that the learning program meets their expectations (Lo, 2010). With the notion that student performance depends on the way lecturers teach it, there are chances that students who engage actively in the lessons could also perform higher than their peers. Nevertheless, this is not always the case because students' performance cannot always be attributed to the quality of instructional support and services that they received during learning. In the traditional classroom, the principal mode of communication is a face-to-face interaction between teacher and student (Anderson, 2003). The interaction that results in knowledge transfer is the interaction between teacher and student, student and student, and student and content (Moore, 1989). But in the modern classroom, the primary mode of interaction is student-to-instructor interaction, student-to-student interaction, and student-to-content interaction and many theories of learning specify the importance of interaction between students and content, arguing that this is the most natural, effective, and efficient way to learn (Gunawardena, 1995, Leidner & Jarvenpaa, 1995). For instance, when using online learning platforms asynchronous communication tools such as discussion threads, and student responses allow individual learners to post comments, review comments made since they previously posted, and respond to these comments. As time goes by, this interaction should lead to more in-depth and broader information processing, more knowledge transfer, and more in-depth learning than if learning were done in isolation (Hornik, Johnson, & Salas, 2008). On the other hand, with the use of synchronous communication tools such as chat,

learners can gain immediate feedback and evaluate their learning with ease (Johnson, Hornik, & Salas, 2008). As individuals' interactions increase, their performance also increases. (Moore, 2002). (Johnson, Hornik, & Salas, 2008) opined that timely feedback and interaction with the instructor can help learners feel that they are valued as well as provide needed information more quickly. Appropriate interaction with peers can increase the information shared in the class which should also lead to a more positive view of the learning environment, as well as help learners see more significant value in the course.

Interactions of all kinds can enhance the learning process and can be appropriate, effective, and efficient in all educational settings (Anderson, 2003, 2003, Murray, Pérez, Geist, & Hedrick, 2013). Stravredes (2002, 2011) emphasized the importance of interaction by affirming that student achievement and positive attitudes increased as the level of interaction increased. One important note, though, was that the quality of interaction was more significantly related to student interaction than the amount of interaction in general. Feedback for students was one significant example; students would instead receive quality, constructive feedback concerning their work rather than simple "good job" or "great," comments that offered no suggestions for improvement. Students needed more detailed feedback from the instructor regarding their grades in the class, which areas they excelled in, and which areas they needed to improve. Also, as higher education institutions continue to expand the use of technology-enhanced learning, more focus will be placed on student/content interaction. According to Anderson (2003), there is a need to transform student/student and student/instructor interactions into enhanced forms of student/content interaction.

Perceive Use

Instructors' presence in online learning platforms is a critical aspect in the promotion of learner interaction thus, influencing their performance (Rhode, 2009, Yilmaz, 2017). Existing studies showed the importance of instructors to ensure that, learners are shown ways to integrate the OLPs into their learning (Oyarzun et al., 2018; Rhode, 2009; Yuen et al., 2009). Students may have negative notions about what to expect from the content found on OLPs, thereby affecting their performance negatively (Izmirli, 2017). Instructors' relationships with students can deter some of these negative preconceptions and highlight the importance of OLPs for teaching (Zimmerman, 2012). By promoting student engagement with OLPs and guiding them on ways to use them, high levels of learner-instructor interaction will lead to more frequent use of OLPs, leading to high performance.

Current educational pedagogy highlights the importance of student collaboration and interaction in OLPs, to create knowledge through collaborative tasks (Heijst et al., 2019). Interaction among students enhances student engagement in learning and creates a sense of an online learning community, giving them a feeling of connection as they share ideas, participate in learning, and construct knowledge, Heijst et al., 2019). Students who have a high degree of engagement in these types of interactions will also use features of OLPs to support such interactions thus, high performance (Shelton et al., 2017). These interactions are facilitated through OLPs features such as forums, chats, message boards, and emails (Angelo and McCarthy, 2018). Students who engage in collaborative projects and tasks can have their interactions supported through the frequent use of OLPs.

OLPs have the potential to provide students with various benefits including improved learning outcomes (Graham & Halverson, 2019). Kuna (2012) examined the effectiveness of collaborative team projects using features provided by OLPs such as email and discussion boards and found that these features enhanced learning outcomes. A similar study by Kirmizi (2015) examined the student experience of using OLPs finding some correlation between students' levels of OLPs use and student achievement.

OLP features can help students in many ways. The assessment feature helps address the learning objectives, the syllabus tool can help students understand and prepare for class requirements, the chat feature can provide real-time communication and encourage group interaction, the discussion board feature can promote communication between instructors and students, and the email feature). can facilitate one-on-one communication between the instructor and students and between students and each other (Garrote Jurado et al., 2014). However, there may be some negative effects on student performance as a result of overusing OLPs (Eom, 2014). In research conducted by Eom (2014), students' performance was largely dependent on the quality of the information provided by OLP features, not just the level of interaction with the OLPs. The absence of face-to-face learning may negatively affect certain students with particular learning styles and for them, using OLPs as a means of engagement with content cannot replace the effectiveness of traditional instruction (van Deursen et al., 2015). Understanding the effect of OLPs and whether their role may mediate the effect of students' interactions on their performance is important to investigate and is fundamental for gaining a deeper insight into these relationships and how they might improve teaching and learning contexts (MacKinnon, 2012).

Students' Performance

Studies of students' performance in online learning platforms have attempted to determine the factors that influence student performance. Findings from several studies indicate students' performance is related to some factors such as interaction, types of support, learner autonomy, technology, self-efficacy, and self-regulation (Artino, 2007, Ashill, Eom, & Wen, 2006, Sahin, 2007, Swan, 2001). Chang & Smith (2008) & Noel-Levitz (2011) showed that Higher Education students who interact with the content, other learners, their lecturers, and content, are more likely to be successful. The combinations of different factors are examined to be correlated with their performance in online learning platforms -enhanced learning environments (Ashi, Eom, & Wen, 2006, Robles, Rodriguez, 2006; Swan, 2001; Yildirim & Yukselturk, 2008). Of these factors, the instructor's online presence, learning content, interactions (learner-instructor interaction, learner-learner interaction, and learner-content interaction), and user interface design are the primary focus of this study. The combination of these forms of interactions is assumed to be predictive of students' performance in Higher Institutions in Cameroon. Hence, students' performance is essential information for instructional designers, curriculum developers, educators, as well as educational administrators, especially when institutions are trying to improve the quality of their programs to maintain or increase students retention (Reinhart & Schneider, 2001)

Kaggwa (2003) opined that academic performance is the quality and quantity of knowledge, skills, techniques, positive attitudes, behavior, and philosophy that students achieve. The World Bank (2002) observed that performance is evaluated by the mark or grade that students attain in tests or examinations done at the end of a topic, term or year, or even educational cycle. Thus, the quality of grades and the number of students that pass in various grades, determine the level of students' performance. Students' performance is therefore a concern of people who have the entire society which makes up a school as a family and unless all these stakeholders are involved, school achievement and students' performance may be difficult to be realized (Dervitsiotis, 2004).

Ojoko (1989) saw students' performance as a cardinal concept in education. Performance is how well an individual can demonstrate desired abilities and skills. The brain behind this is derived from the goal of teaching, which is to bring about desired changes in knowledge, skills, and attitudes in students. For instance, parents send their children to school to acquire certain competencies, and their preference about the attribute of interest indicates the degree of efficacy

of the machinery of education. In a formal school system, students' performance can be assessed at the points which give rise to three types of performance evaluation which are, diagnostic, formative, and summative evaluation respectively. Diagnostic evaluation takes place at the beginning of the lesson, chapter, or program, and this is aimed to ascertain the learners' previous knowledge about the lesson, chapter, or program. Formative evaluation takes place during the teaching-learning process to keep learners on track or to check the flow of ideas ranging from teaching methods to learning materials chosen for the lesson. Summative evaluation is carried out at the end of the lesson or program and it could end of course examination where grades are awarded ranging from A, B, C, D, and F, according to students' performance by the lecturers or external examiners.

Driscoll (2005) says students' performance is observed to be the direct outcome of learning. It is the main indicator that, learning has taken occurred. According to him, learning is persisting change in performance potential that results from experience and interaction with the world. So, for learning to be observed, there must be demonstration through students' performance. Unrelated tasks through performance may not necessarily reflect an inadequacy in learning. Bandura (2000), on the other hand, said it is possible to learn a task and yet perform poorly in it. To him, another factor in the learning process could influence performance on tasks. Students' performance demonstrated using scores on the test, has over the years been used to determine the competence of a student in a particular course. According to Gagne (1985), there are five main categories of learning outcomes which are intellectual skills, verbal information, cognitive strategies, attitudes, and motor skills these outcomes are very necessary to the learning process and different learning tasks would require the demonstration of various learning outcomes.

Astin (1982) opined that students' performance is dependent on a combination of variables such as personal, demographic, and institutional, variables. These variables according to the researcher are very important when it comes to students' performance.

Polloway (999), defines students' performance as the child's performance in school, measured not only by grade but also by teachers' observation and the student's self-perception, through the performance on standardized tests receives the greatest attention in dissuasion of students' performance, teacher's evaluation of performance indicated in course grades represent a common metric of students' performance that is often more directly tied to the day-to-day business of teaching and learning than are annual standardized tests scores. Grades serve several

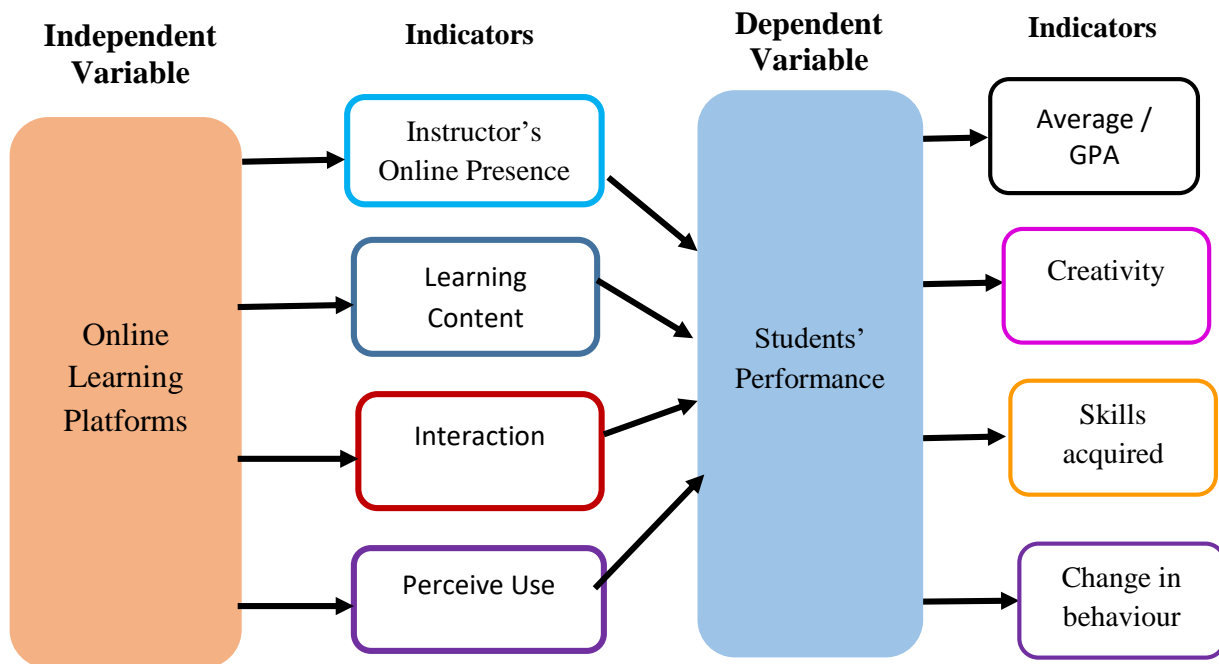
important functions thus: they communicate to students and parents information about students' mastery of course content.

Students' performance in higher education determines their level of achievement in the teaching-learning process and this performance could be positive or negative. Lecturers who properly select their learning content in line with the learning objectives, use good teaching styles, encourage content-learner interaction, student-student interaction, student-teacher interaction, and appropriate user interface Design, during the teaching-learning process, will influence students' performance positively, and vice versa.

Many investigations have been conducted in education focusing on the investigation of students' learning outcomes. Many of these studies examined affective perspectives such as satisfaction and often neglected the cognitive learning outcomes, such as the effectiveness of courses, student performance, or student achievement, each of which is usually measured regarding course often neglected grades (Barnard, Lan, & Paton, 2008, Edvardsson and Oskarsson, 2008, Barth, Bezalel, Offir, 2007). High students performance can lead to lower drop-out rates, higher persistence, and more significant commitment to a program (Ahmad, and Ali, 2011, Allen & Seaman, 2003, Noel-Levitz, 2011, Reinhart & Schneider, 2001, Yildirim, and Yukselturk, 2008). Investigating students' performance can help Higher Education institutions in Cameroon to increase students' persistence and more significant commitment to any educational program. Also, students' performance can enable organizations to target areas of improvement and facilitates the development of strategic planning for specific learners (Noel-Levitz, 2011).

So, the researcher's view of students' performance in Higher Institutions in Cameroon is in line with Ojoko (1989), who saw students' performance as a cardinal concept in education on how well a student/individual can demonstrate desired abilities and skills.

Figure 1: Conceptual framework of the effect of online learning platforms on students' performance.



Source: Fieldwork July 2022) Key

Importance of online learning platforms

Online learning platforms provide the lecturer with a way to create and deliver content, monitor student participation, and assess student performance. OLPs also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums with comprehensive distribution from lecturers to students, (Agbakwuru, Agbasonu, Amanze, Uzoma, Chibuike, Onyekachi & Ozioma, 2022). It can be an important component of innovation, not only by its direct application, but also because it is a vector for other innovations that facilitates, enhances, and, among others, highlights e-learning (Laurindo, 2009). However, when using IT in the educational process, it is essential to identify the conceptions that underlie its development, and have an adequate view of its possibilities and potentials, because depending on its use, it will explicit the understanding that we have of the educational process in a space that includes the technology itself (Garrido & Schlemmer, 2007). The development of online learning platforms has generated interactive media allowing learning and collective construction of knowledge through networks, with interchangeability of the roles of source and receiver.

Oliveira (2012), opined that online learning platforms bring students and instructors closer to the classroom mode concerning personal interaction and preserve the distance between teachers

and students, to improve the process of mediated communication, systematic guidance, and constant monitoring, focused on the formation of skills and attitudes that allow the student to have learning process autonomy in a continuous self-education. In this context, there provide progressively greater flexibility and accessibility to education, culture, and professional and personal development, contributing to the creation of educational systems. Oliveira (2012) also emphasizes that the introduction of OLPs in education may not be a pedagogical innovation, once the use of old educational practices is no guarantee of new education. Thus, the criterion to analyze a project of e-learning seems to be not only in the technological mediation but in the didactic-pedagogical conception that is related to both technical support and its use in the pedagogical mediation.

Convenience: Since online learning platforms allow students to take courses at their own time and pace, it is more convenient than their in-person counterparts. Turban et al. (2010) show the flexibility of e-learning stating that students can even refer back to previous lectures without affecting the learning pace of other students.

It can help remove barriers to achievement, by providing new and creative ways of motivating and engaging pupils and learners of all abilities, enabling and inspiring everyone to attain their educational potential. Online learning platforms can support learning by offering differentiated learning, particularly for those who need support in literacy, numeracy, and ICT. It offers a wide range of tools to enable teachers and learners to be innovative, creative, and resourceful in all learning activities. Teachers and learners can easily customize digital learning resources to suit pace and level, appropriate to any learning style and ability.

Online learning platforms create online communities of practice. The Internet can bring learners, teachers, specialist communities, experts, practitioners, and interest groups together to share ideas and good practices. It can provide an individualized learning experience for all learners, including those who are disadvantaged, disabled, exceptionally gifted, have special curriculum or learning needs, or who are remote or away from their usual place of learning.

OLPs can facilitate wider participation and fairer access to further and higher education by creating the opportunity to start learning and to choose courses and support according to the learners' needs. It provides personalized learning support through information, advice, and guidance services. It can help learners find the course they need, with a seamless transition to the next stage of their learning, including online application or enrolment and an electronic portfolio of their learning to take with them. OLPs provide virtual learning worlds where

learners can take part in active and creative learning with others through simulations, role-play, remote control of real-world tools and devices, online master classes, or collaboration with other education providers.

Online platforms promote learning by encouraging and motivating the students' use of various learning strategies at hand and increases the level of their commitment to studying their majors. The virtual world represents an effective learning environment, by providing students with experience-based information acquisition. With the help of online learning platforms, Instructors set up the course outcomes by creating tasks involving problem or challenge-based learning situations and offering the learner full control of exploratory learning experiences. Another benefit of using online teaching/learning is that there is a need to explore new teaching strategies and principles that positively influence distance education, as traditional teaching/learning methods are becoming less effective at engaging students in the learning process. Finally, Online learning platforms can solve many of the students' learning issues in a conventional learning environment, as it helps them to attend classes for various reasons, has made the communication/interaction between them and their instructors much easier, and the access to lectures much more at hand. Students can attend online university courses and at the same time meet other social obligations. Therefore, the circumstances in a learner's life, and whatever problems or distractions he/she may have such as family problems or illnesses, may no longer impede his education. Learners can practice in virtual situations and face challenges in a safe environment, which leads to a more engaged learning experience that facilitates better knowledge acquisition.

Barriers to online learning platforms

The instructors face some challenges such as the selection of the most appropriate educational strategies and how best to design learning tasks and activities to meet learners' needs and expectations. Also, various approaches can lead to strong student behavioral changes, especially when combined with ethical principles. However, with careful selection of the learning environment, and pedagogical strategies lining up with the concrete specifics of the educational context, the building of learners' self-confidence and their empowerment during the learning process becomes within reach.

OLPs, despite the advantages that it has when adopted in education, also have some disadvantages. Most online students may not be in a position to determine their academic needs, attributes, and weak points precisely since there is no direct interaction with the instructor or

other students. OLPs programs require a lot of faculty involvement, which encourages online peer support among the students. High dropout rates are experienced in online learning systems as compared to traditional education systems. The online learning educational system may not provide an adequate balance between intellectual learning skills and team-building community skills.

OLPs programs are not suitable for everyone, because most of those students who perform well in the traditional system of education which encourages face-to-face instructor-student interaction are likely to experience some serious difficulties with online-based learning. Adopting online learning and its technology requires large investments in faculty, time, money, and space that need to be justified by administrators and leadership.

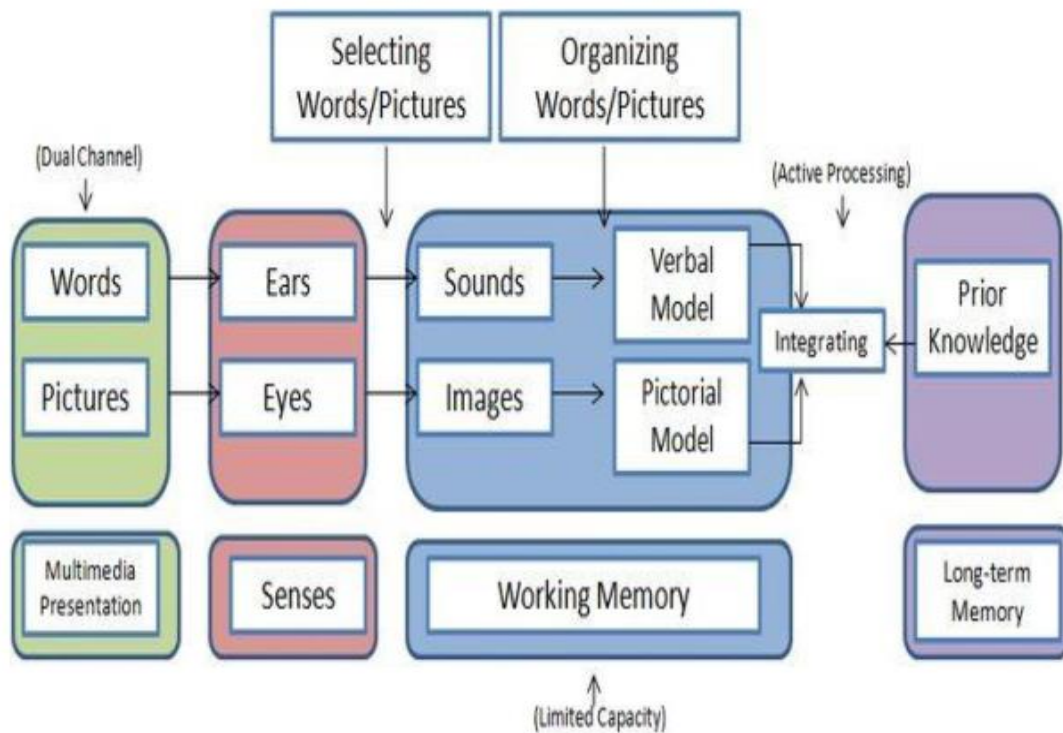
Theoretical Framework

Cognitive Theory of Multimedia Learning

According to Mayer (2010), the “Cognitive Theory of Multimedia Learning seeks to explain the processes that take place in the minds of learners during meaningful learning from multimedia instruction”. Multimedia instruction can be displayed or projected in a classroom using a multimedia projector. Multimedia can be explained as the use of words and pictures (verbal and visual).

According to Mayer (2010), “the CTML theory has clear implications for instructional design to facilitate multimedia learning, in particular for how to avoid cognitive overload”. Cognitive development helps teachers in selecting what to consider when planning a lesson instruction. (Mohamad, Tee, & Yee, 2017). Cognitive development enables teachers to identify learners’ learning styles because it helps students actively construct their knowledge and build on prior knowledge. The multimedia projector helps the learners to have active interaction which will help cognitive growth (Mayer, 2014; Mohamad, Yee & Tee, 2017). The Cognitive Theory of Multimedia Models.

Figure 2: the cognitive theory of multimedia models



Source: Adapted from (Mayer, 2010)

Figure 2 above shows the process of CMTL. There are five processes of CTML which are the selection of the word; selection of pictures; organizing of words; organizing of pictures and integration of verbal and pictorial models. In teaching and learning a teacher can explain a topic using a video or film that has pictures and words using a multimedia projector. The learner will use the ear or eyes sensory to select the words or sounds and the working memory to organize the words or the sound. The learner uses long-term memory to make use of the material that is presented using prior knowledge in the long-term memory. Mayer (2010) defined generative processing as the “cognitive process that is required for making sense of the presented material (selecting, organizing and integrating words and images)”. Falvo (2008) studied, “animations and simulations for teaching and learning molecular chemistry”. The study discussed the effectiveness of animations for teaching and learning molecular sciences. Animation is a feature of the slide presentation which can be projected through a multimedia projector. Teachers can animate their presentations when they want to apply transition in a slide show and display it for learning purposes. Animation enables the user to add graphics and sound as objects in a slide (Balogun, Gambari, & Yusuf, 2015).

Animation supports the dual channel in CTML which is the picture and word. The study by Falvo (2008) pointed out that, “animations and simulations visually help students understand difficult concepts related to the dynamics of complex chemical systems including molecules and reactions”. Falvo (2008) concluded that “animations assist students to better understand dynamic molecular processes in chemistry and biochemistry”. It is further explained that “solid foundational (prior) knowledge prepares students to learn and retain structural and process concepts conveyed by animations”. The use of Google classroom in teaching and learning can be one of the advancements in technological tools in education used in animation and simulations that will help learners to understand concepts better (Falvo, 2008).

Shamim (2018) studied, “application of Cognitive Theory of Multimedia Learning in undergraduate surgery course”. The main objective was to examine the effectiveness of a video technology that applies the theory of CTML in teaching general surgery operations. Shamim (2018) research on “Application of Cognitive Theory of Multimedia Learning in Undergraduate Surgery Course” concluded that, “the video-based operative sessions are an effective mode of teaching general surgery operation in resource-limited setting”. The majority of the 26 learners were satisfied with the use of CTML. Learners understood better when they learn through videos (Patel, 2013) Multimedia projector can be used as a technological tool that supports multimedia learning and can be used to explain and enhances the CTML. In understanding, multimedia learning Mayer and Sims (1994) investigated “the dual-coding theory of multimedia learning of scientific systems, such as automotive braking systems, the human respiratory system, and the basic bicycle tire pump”. In their study, the results indicated that “the students with high spatial ability who received a concurrent multimedia presentation (animation and narration) fared better on a transfer problem test than high-spatial ability students who were presented with a successive learning explanation or no explanation at all”.

The findings from this study supported the use of the dual channel in CTML. Learners have better chances to construct multimodal connections when both pictures and images are presented to them concerning the prior knowledge and content.

This theory is important to this work because the theory explains that a learner’s motivation is needed to initiate and maintain learning among students. This could be done with the help of attractive videos and media elements that keep students and their peers jovial during learning.

The theory is equally important in the fact that the learners need to be schooled on basic Multimedia skills necessary to construct and execute activities online and enable learning among students.

Achievement Goal Theory

Origins of the Achievement Goal Theory

Achievement goal theory was influenced by and grew out of three major motivational frameworks, namely, social-cognitive theory, the achievement motive tradition, and attribution theory. First and foremost, goal theory is a social-cognitive approach to motivation. It recognizes and emphasizes the reciprocal influences of personal and environmental factors on goal endorsement, and underscores the importance of perception (Dweck & Leggett, 1988).

In many ways, goal theory is also indebted to the pioneering work on needs and motives by McClelland and Atkinson (McClelland, 1961). The primary assumption of goals as organizers and energizers of action comes from this historic area of inquiry (Elliott & Dweck, 1988), with achievement goals representing a perhaps finer-grained, and therefore potentially more predictive, unit of analysis (Dweck & Leggett, 1988). Furthermore, many of the defining features of contemporary goal frameworks, chiefly the approach-avoidance distinction, grew out of the work on motives (Elliot, 1999). Indeed, some theorists have suggested that achievement goals have their basis, in part, in the two achievement motives (Barron & Harackiewicz, 2001; Elliot & Church, 1997; Zusho et al., 2005). Elliot & Church's (1997) hierarchical model of achievement motivation, for example, outlines the idea that the motive to approach success and the motive to avoid failure may affect the endorsement of approach and avoidance goals, respectively. Across these three traditions, however, attribution theory has arguably been the most influential.

Traces of this theory can be seen in the early writings of all the major originators of goal theory (i.e., Ames, Dweck, Maehr, and Nicholls). Maehr and Nicholls (1980), for instance, discuss how expectations of future outcomes play a pivotal role in both theories. Ultimately, goal theory is a theory concerned with the source of attributional styles; it is a theory governed by a quest to identify why students, often of equal academic ability, respond so differently to the same academic task. Why, for example, do some students exhibit what Dweck and her colleagues called a "helpless" orientation while others display a "mastery" orientation (Dweck & Leggett, 1988; Elliott & Dweck, 1988)? When faced with an academic task, why do some students make more ability attributions (e.g., "was I smart?") than effort (e.g., "did I try hard?")

attributions (Ames, 1984)? The answer, according to goal theory, is the two primary goals of mastery and performance. Nevertheless, questions remain and differing opinions exist about the nature and origins of these goals.

Perspectives of Goal Theory

A quick reading of the literature on goal theory will reveal two main perspectives—the traditional and/or normative perspective, reflected primarily in the writings of Ames, Dweck, Maehr, and Nicholls, and the revised, or what is now referred to as the multiple goals perspective, which was popularized by Harackiewicz, Elliot, and their colleagues (Harackiewicz et al., 2002; Midgley, Kaplan, & Middleton, 2001; Roeser, 2004). However, we contend that there are more than just these two perspectives of goal theory. In general, we see perspectives emerge according to differing assumptions about (a) the origins of goals, (b) the issue of motivational equity, and the role of performance goals (Harackiewicz et al., 2002; Midgley et al., 2001; Roeser, 2004), and (c) the appetitive and aversive nature of goals and the possibility of multiple goal endorsement (Elliot, 1999, 2005).

These models of achievement goal theory typically present goals as based on self-schemas, focusing on how personality and/or self-related constructs play a major role in goal adoption. In the case of online learning, motivation is viewed as a personal trait exhibited to varying degrees by individuals, much as intelligence. It is typically also assumed that it is a relatively stable trait: a pattern of feeling, personal orientation, and behavior that is hypothesized to be a disposition acquired in early childhood and retained to a substantial degree across the course of development.

Dweck's model of achievement goals, for the most part, is representative of this approach. She argues that goals have their basis in an individual's implicit theory of intelligence. Although implicit theories are amenable to change (Thompson & Musket, 2005), in general, they are considered to be somewhat stable beliefs that can explain individual differences in goal endorsement (Dweck & Leggett, 1988). Specifically, Dweck suggests that individuals who hold a more malleable or incremental view of intelligence and therefore, who view ability as something that can be improved over time, would be more likely to adopt mastery goals whereas students with low perceptions of competence who typically view intelligence as fixed and innate, or possess an entity view, would be more likely to endorse performance goals.

Another perhaps more direct example of this person-oriented approach is reflected in studies that have explored the link between motives and achievement goals (Barron & Harackiewicz,

2001; Elliot & Church, 1997; Zusho et al., 2005). As mentioned earlier, there is empirical evidence to suggest that the two achievement motives—namely, the motive to approach success and the motive to avoid failure—are related to the endorsement of certain achievement goals. Particularly, Elliot and Church (1997) suggest that the motive to approach success is related to the endorsement of mastery goals and the goal to outperform others, referred to now in the literature as performance-approach goals, since they both focus on the demonstration of competence. In contrast, they suggest that the motive to avoid failure is related to a focus on avoiding the demonstration of incompetence, or what is now more commonly referred to as performance-avoidance goals (we will return to this distinction between approach and avoidance forms of motivation subsequently). Correspondingly, Harackiewicz, et al., (1998) suggest that a work mastery orientation might precede the endorsement of mastery goals, while a competitive orientation might facilitate the adoption of performance-approach goals.

In direct contrast to the person-centered view of goals is the situated perspective, which essentially argues that goals are more often a function of the situation or context. Recognizing that students are not always highly motivated across all school contexts, this perspective places more weight on the activation of goal endorsement based on schemas arising from the situation (Hickey, 1997; Kaplan & Maehr, 2005). In particular, this approach calls attention to the role of environmental cues. To the extent that students perceive there to be more cues focused on learning and understanding, it is hypothesized that they will be more likely to adopt mastery goals in that context. Correspondingly, it is suggested that the likelihood of students adopting performance-oriented goals would increase based on the strength of cues emphasizing social comparison or competition in the environment. Such notions are also apparent in the supposition that students who typically endorse high levels of both mastery and performance goals may have the best academic prospects because they can selectively choose the most appropriate goal to pursue at a given time based on the perceived demands of the classroom (Barron & Harackiewicz, 2001).

This perspective has resulted in programs of research focused on understanding students' perceptions of the classroom environment and their relation to specific achievement goals. Prototypical of this approach is the work by Carole Ames (Ames, 1992; Ames & Archer, 1988; Ames, et al., 1992) who largely initiated this more applied approach to the study of goals. Her work has been instrumental in outlining how cooperative classroom goal structures rather than competitive goal structures lead students to adopt more adaptive motivational profiles such as

the endorsement of mastery goals. Understanding that the best efforts on the part of a classroom teacher to promote a mastery-oriented climate could be undermined by school-level policies emphasizing social comparison and performance goals, Ames's work was further extended by Maehr and Midgley (1991, 1996), who focused on applying achievement goal theory to the level of the school (we discuss this line of research in a following section).

So far, we have presented two contrasting perspectives of goal theory—one that emphasizes the origin of achievement goals in the person and one that stresses contextual factors as the more important determinant of goals. Again, it is important to note that both of these perspectives recognize that goals have their origin both in the person and context; nevertheless, very few models of achievement goals can be considered to be truly transactional (Kaplan & Maehr, 2002). Moreover, studies that empirically test this assumption, for example, those that examine how goals are both stable and mutable across time and context, remain scant (Fryer & Elliot, 2007; Wolters, Yu, & Pintrich, 1996). Notable exceptions include the theoretical models advanced by Nicholls and Maehr, which represent a more interactionist view of achievement goals.

Nicholls' (1984, 1990) framework is fundamentally developmental and places conceptions of ability at the heart of achievement goals, with emphasis on the differentiation (or lack thereof) between effort and ability. More specifically, he proposed that students who hold a differentiated view understand that exerting effort is not necessarily indicative of a lack of ability and therefore, would be more likely to endorse mastery goals, whereas students who equate effort with a lack of ability would be more likely to adopt performance goals. Furthermore, he presupposed that certain situations (e.g., evaluative settings, emphasis on interpersonal competition) would make us more "mindful" of our ability, which could also enhance the endorsement of performance (or what he termed ego-involvement) goals.

Similarly, Maehr's Personal Investment Theory (Maehr & Braskamp, 1986), also outlines how situational constructs, such as one's perceived purpose of the situation and the accompanying options or alternatives that a person perceives to be legitimate in that situation, together with self-related processes underlie the adoption of achievement goals (Kaplan & Maehr, 2002).

This approach portrays goals as emerging from both the situation and the person; specifically, drawing on work on stereotype threat, we hypothesized that performance goals represent a heightened awareness of the self that arises from situational cues, such as the extent to which the situation makes one aware of what one is, or what one can be (Kaplan & Maehr, 2005).

The Dilemma of Performance Goals Much has been made of the differing views about the role of performance goals in the recent literature (Harackiewicz et al., 2002; Linnenbrink, 2005; Midgley et al., 2001). On the one hand, is what has been coined the normative perspective (championed primarily by theorists such as Nicholls, Ames, Maehr, Midgley, and to a certain extent Dweck), which suggests that performance goals under certain conditions are essentially inimical to learning. On the other hand, is the multiple goals perspective (forwarded primarily by Harackiewicz, Elliot, and colleagues), which, pointing to evidence of positive associations between performance-approach goals and achievement, proposes that performance goals are not entirely detrimental to learning.

As Elliot and his colleagues have suggested, the primary objective of the multiple goals perspective was never to champion performance goals, *per se*, but rather to document for whom and under what conditions performance goals resulted in enhanced academic performance (Elliot, 2005; Harackiewicz et al., 1998; Harackiewicz et al., 2002). Indeed, proponents of this perspective fell just short of advocating that performance goals should be enhanced or encouraged. After all, their focus was on documenting the effects of performance goals, whether good or bad and not necessarily on how such findings could be applied to the classroom. Ultimately, it was hoped that such findings would lead to a more nuanced view of performance goals than previously suggested.

Impacts on Cognition, Emotion, and Behavior

Each of the four types of achievement goals exerts different effects on students' cognitions, emotions, and behaviors across all grade levels (Urdan & Kaplan, 2020). Students who endorse high levels of performance-approach goals tend to attribute success to uncontrollable factors (Seifert, 1995) such as innate abilities or intelligence rather than due to effort or persistence. They are also likely to adopt shallow cognitive strategies (e.g., rehearsal; Ho & Hau, 2008), demonstrate an unwillingness to seek help (Butler, 2006), display academic dishonesty (Van et al., 2011), experience increased negative achievement emotions (Huang, 2011), and have low perceptions of success (Daniels et al., 2008). Despite these associations with less-than-desirable processes, meta-analyses reveal consistent positive small associations between performance-approach goals and academic achievement (Huang, 2012; Hulleman et al., 2010). With consistent positive effects on grades, arguably the main indicator of success in the education system (York et al., 2015), it becomes hard to discourage performance-approach goals. However, it is important to acknowledge that although these students might perform at the top

of their classes, they do so while experiencing maladaptive cognitions and emotions (Daniels et al., 2008)—outcomes that may be particularly relevant for school psychologists to consider alongside academic gains.

Students who endorse high levels of mastery-approach goals are more likely to hold a growth mindset, believing that their ability to learn is not innate but can be improved through hard work and persistence (Buluş, 2011; Grant & Dweck, 2003). Researchers also find that students holding mastery-approach goals tend to utilize effective cognitive strategies that help them grasp deeper insight into a subject and retain maximum knowledge/skills (Huang, 2011). As such, these students tend to be better equipped to apply their learning to new settings as opposed to rote memorization of a task that is quickly forgotten. Additionally, these goals are associated with finishing a task properly and experiencing sustained interest (Senko & Harackiewicz, 2005), as well as feeling more pleasant and fewer negative emotions (Huang, 2011). In contrast to performance-approach goals, the relationship between mastery-approach goals and grades tends to be indirect through these beneficial processes (e.g., Mouratidis et al., 2018); although, meta-analyses do recognize a consistently small direct effect when mastery-approach goals are operationalized according to the 2×2 model (Huang, 2012; Hulleman et al., 2010).

A meta-analysis by Baranik et al. (2010) reveals that overall both performance-avoidance and mastery-avoidance goals tend to be linked to an array of maladaptive outcomes for students. Based on 33 unique samples, they found mastery-avoidance and performance-avoidance goals were negatively associated with cognitive ability, grades, and help-seeking behaviors, whereas positively associated with negative emotions/affect. Students who endorse high levels of performance-avoidance goals tend to have a high threat appraisal and view new opportunities, not as a chance for development, but instead as a risk of failure (Van de Walle, 2004). Students who endorse high levels of avoidance goals have also been found to procrastinate and be more likely to give up following a setback (Senko & Freund, 2015). Finally, meta-analyses reveal consistently small negative associations between mastery-avoidance and performance-avoidance goals, and academic achievement (Huang, 2012).

Multiple Goals Perspective

Although the effect of achievement goals is often examined independently on outcomes, some researchers argue for a multiple-goal perspective (Pintrich, 2000) in which the combinations of achievement goals held by students are most relevant to outcomes. Individuals might strive for different goals at the same time or work toward a desired result for a variety of reasons. For instance, a student might invest effort in a project due to enjoyment of the task itself as well as

interest in improving their overall grade. Proponents of multiple goals argue that mastery and performance goals are not in direct opposition to one another and instead can be held simultaneously. Indeed, meta-analyses of associations amongst the 2×2 operationalizations of achievement goals show significant positive correlations ranging from $r_s = .13$ to $.51$ (Baranik et al., 2010; Huang, 2012).

Much of the multiple-goals research relies on some form of person-centered analysis rather than variable-centered. For example, Tuominen-Soini et al. (2008, 2011) used latent profile analyses to show that some students adopted primarily mastery or performance goals, whereas others held these in combination, with some showing a higher preference for avoidance-based goals and others displaying disengagement through low scores on all achievement goals. Researchers explain that when students hold both performance-approach goals and mastery-approach goals they may not only reap some positive outcomes usually restricted to mastery-approach goals, like task interest and sustained attention, but the maladaptive outcomes associated with performance goals alone seem to be buffered. In particular, Linnenbrink-Garcia et al. (2018) found the highest levels of engagement among students who solely endorsed mastery-approach goals and those who held mastery approach and performance goals, both approach and avoidance. The positive outcomes associated with these two different goal profiles did not differ significantly.

There are also interesting insights regarding emotions and behaviors when examined from a multiple-goals perspective. For example, in an early person-centered analysis with first-year university students, Daniels et al. (2008) used cluster analysis to identify four naturally occurring groups of university students. Students in the multiple goals (high mastery and high performance), mastery, and performance groups showed equivalent levels of academic achievement (i.e., final grades and GPA). However, students in the performance group were significantly more psychologically and emotionally vulnerable than the multiple goals and mastery groups. As expected, students in the low-motivation group (low mastery and low performance) demonstrated the least adaptive cognitions, emotions, and academic achievement. More recently, Lo et al. (2017) showed that middle school students could be classified into three latent groups at the beginning of the school year described as maladaptive (high mastery/performance-avoidance), indifferent (no dominant achievement goal), and success-oriented (high mastery approach and high-performance approach). In terms of their resultant motivation, cognition, and performance, students in the success-oriented group had higher scores than those in the indifferent group. In turn, these outcomes were more adaptive

than those of students in the maladaptive group. In short, even when students hold multiple achievement goals, mastery-approach goals continue to hold certain advantages.

Review of Achievement Goal Theory Interventions

Because achievement goals can be viewed as cognitive representations of desired outcomes (Hulleman et al., 2010), they can differ across situations and change over time. The majority of interventions based on Achievement Goal Theory are designed to adjust the structures of the learning environment to create mastery-approach classrooms that will facilitate the adoption of personal mastery-approach goals by students. However, because achievement goals are more akin to beliefs that can be adjusted than they are too permanent traits, it is also possible to directly target students' achievement goals at the individual cognitive level. In both instances, the desired outcome is to cultivate mastery-approach achievement goals relative to other goals. Here we review a broad scope of some of the theory's central intervention work targeting both the classroom context and the individual.

Classroom Level Interventions

The lion's share of Achievement Goal interventions aims to promote a mastery-oriented classroom goal structure (Ames, 1992). Researchers applying classroom-level interventions most often do so with the principles summarized in the acronym TARGET. Teachers should make *tasks* meaningful to the students and present various degrees of the challenge so that differences in ability are not highlighted. *Authority* should be shared between students and teachers in deciding classroom rules and making decisions. The teacher should privately recognize students' progress, effort, and creativity, rather than publicly commenting on a student not making mistakes or performing well without effort. Teachers should not *group* students based on ability level or performance. Instead, through mastery-approach structuring, students are grouped according to a domain of interest or to student differences that may enable learning. *Evaluation* should also be done privately with a focus on progress rather than relative class performance. Finally, students thrive when class/assignment *time* is flexible so that they have the opportunity to work at their own pace. In a recent meta-analysis, Bardach, et al. (2020) indeed found a strong positive association between mastery approach classroom structures and students' personal mastery-approach goals $\hat{r} = .494$ (95% CI [0.461, 0.526]). While this was one of the largest associations, it is important to note that mastery-approach classroom structures were associated with small positive effects for the other three types of achievement

goals as well. One reason for this may be the wide range of ways to interpret and actualize the full TARGET recommendations in the classroom.

TARGET interventions are particularly popular in sports and physical education (Cecchini et al., 2014). According to a meta-analysis in this domain (Braithwaite et al., 2011), interventions that focused on implementing the full TARGET strategies to create conditions that favor mastery goals, had small to moderate effects relative to control groups for students' affective, behavioral, and cognitive outcomes. These results were most pronounced for elementary school students relative to higher grades. Considering a specific example, Wadsworth et al. (2013) randomly assigned elementary physical education classes to either be taught using mastery or performance-based instruction following the principles of TARGET. Each participating teacher taught half of their classes with each goal orientation in mind. Specifically, mastery-based instruction offered students autonomy, privately delivered feedback, and framed evaluation in terms of task standards. Performance-based instruction afforded students limited options, delivered feedback in a public manner, and used other students' performance as the standard of evaluation. The researchers concluded that irrespective of the teacher, students who received instruction based on the tenants of mastery spent less time sitting, more time engaged in vigorous activity, required less class management, and experienced more enjoyment than students who received performance-based instruction.

Some researchers argue for the idea of *social relationships* being a seventh addition to the TARGET intervention and propose the use of an updated acronym: TARGETS. Results from the survey and observational data suggest the importance of upholding strong social relationships in a classroom to help promote personal mastery-approach goals. For example, teachers that create a positive interpersonal class environment by demonstrating positive affect, encouraging students' growth, and fostering mutual respect are found to be more likely to lead high mastery-focused classrooms (e.g., Miller et al., 2017; Patrick et al., 2011). These findings are in line with other achievement motivation research that highlights the importance of supporting students' needs for relatedness and connection (Ryan & Deci, 2017).

Individual Interventions

Individual interventions that target specific cognitions to direct students toward mastery-approach goals, and away from performance-approach goals, are under-represented in Achievement Goal Theory. However, because achievement goals share a homological net with many motivation constructs, researchers have tested how cognitive interventions from related theories may influence the adoption of personal achievement goals. We review the one direct

explicit individual mastery-approach intervention we located (Martin, 2008) and a few examples rooted in Attribution Theory and Mindset Theory.

Martin (2008) had high school students independently work through 13 modules explicitly encouraging the adoption of mastery-approach goals through learning about components relevant to motivation and engagement. Each component had a reflective section where students consolidated their learning by making the key messages personally relevant. Students in the control condition received no intervention. Students in the experimental group reported increases in mastery orientation, task management, persistence, and valued learning experiences. They also showed decreased levels of negative achievement emotions and self-handicapping behaviors, whereas students in the control condition reported increases in these domains.

Attributional Retraining (AR) is a common individual intervention technique derived from Attribution Theory (Graham & Taylor, 2016) that enhances students' sense of control over the outcomes in their environments. In an academic context, it can help students adopt adaptive causal attributions for failure, such as attributing a poor test grade to lack of effort as opposed to lack of ability, through a brief one-time video or handout intervention (see Perry & Hamm, 2017). From an attribution perspective, the intra-individual nature of mastery-approach goals allows them to be theoretically associated with controllable attributions like effort relative to performance-approach goals which are theoretically more similar to uncontrollable ability attributions.

Thus, some researchers have used this framework to enhance achievement goals. For example, Haynes et al. (2008) implemented an AR intervention with first-year undergraduate students that consisted of watching a short video explanation and receiving a handout describing how academic performance can be influenced by causal attributions. Next, the participants engaged in a short writing consolidation exercise and then completed a post-test questionnaire. Compared to a no-treatment control group, students who received the AR intervention had significantly higher levels of mastery motivation at the end of the school year and this increase also mediated the relationship between AR and GPA. Hamm et al. (2014) used a similar AR technique making it explicitly known to students that grades increase when controllable attributions are made for a given failure. They found students who endorse high levels of performance goals especially benefit from AR through increased levels of mastery motivation. Similar interventions are popular in the field of Mindset Theory (Dweck & Master, 2009) where beliefs around the malleability of capabilities like intelligence are the target. Because researchers have found that a fixed mindset (i.e., the belief that intelligence is innate and cannot

be changed) is associated with low endorsement of mastery-approach goals (De Castella & Byrne, 2015), it seems that interventions that try to shift students to a growth mindset may also increase mastery-approach goals. As a case in point, DeBacker et al. (2018) created a one-time mindset intervention for students in ninth grade that demonstrated how the brain can grow with us, akin to a muscle, and had participants synthesize their understanding of this concept through a comprehension check. Students in the intervention condition not only demonstrated increased growth mindset beliefs (i.e., that intelligence can be developed) but also higher levels of mastery-approach goals and lower levels of performance-avoidance goals. In other words, students who learned about the malleability of intelligence were more likely to focus on improving their skills and learning at school as is part of mastery-approach goals and less likely to be concerned about appearing incompetent in comparison to their peers, as would be the case with performance-avoidance goals.

These types of “direct appeal” individual interventions are under-represented in the Achievement Goal Theory literature and yet may be particularly relevant for application to the practice of school psychology. Next, we apply the achievement goal principles to various tasks associated with the work of school psychologists. Future empirical research will be needed to evaluate the effectiveness of these recommendations because, although they extend logically from the empirical research and are suitable for psychologists and other mental health professionals working with children in education, they are currently based solely on the complementary evidence reviewed above.

The social learning theory

Short, et al (1976) originally developed the theory of social presence to explain the effect telecommunications media can have on communication. They defined social presence as the degree of salience (i.e., quality or state of being there) between two communicators using a communication medium. They posited that communication media differ in their degree of social presence and that these differences play an important role in how people interact. They conceptualized social presence primarily as a quality of a communication medium that can determine the way people interact and communicate. From their perspective, people perceive some media as having a higher degree of social presence (e.g., video) and other media as having a lower degree of social presence (e.g., audio). More importantly, they believed that a medium with a high degree of social presence is seen as being sociable, warm, and personal, whereas a medium with a low degree of social presence is seen as less personal. Computer-Mediated

Communication (CMC) researchers later used this theory to explain that CMC was inherently impersonal because nonverbal and relational cues—common in face-to-face communication—are filtered out of CMC (Walther & Parks, 2002).

The Importance of Settings

Early researchers, though, studied CMC primarily in organizational or business settings; that is, early on, they conducted very little research on CMC in educational settings. Educational settings—specifically classroom settings—have different dynamics that researchers consider when studying CMC because no such thing as a typical CMC message exists (Herring, 2007). Much of the meaning and significance of CMC depends on its surrounding discourse (Herring, 2007), and the surrounding discourse in educational settings—specifically online educational settings—is very different from that in business settings (Gee, 2007).

Education is a social practice (Lafey, et al 2006; Shea, Fret et al 2001); consequently, any formal learning environment must be able to support the social practice and process of learning. Earlier on though, people criticized online education because they believed that the absence of social cues would interfere with teaching and learning (Berge & Collins, 1995). Despite this criticism, online education continues to grow as access to the Internet increases; in fact, enrollments in online education continue to grow each year (Allen & Seaman, 2006; Tallent-Runnels et al., 2006).

However, despite occasional reports of loneliness and isolation (Grubb & Hines, 2000; Robinson, 2000), proponents and practitioners of online education argue that online education and CMC can support the social practice of learning. Even though nonverbal and relational cues are filtered out, these researchers have argued that CMC can still be very social and interpersonal (Gunawardena, 1995; Gunawardena & Zittle, 1997) and at times even hyperpersonal (Walther, 1996). Further, as researchers (Gunawardena, 1995; Tu, 2000) began examining the sociability of online education, these new researchers began to question the degree to which the attributes of a communication medium—in this case, the cues filtered out of CMC systems—determine how people socially interact and are perceived as “being there” when communicating online (Danchak, et al 2001; Gunawardena, 1995; Gunawardena & Zittle, 1997; Richardson & Swan, 2003; Tu, 2000).

The Evolution of the Social Presence Theory

As a result, these researchers began questioning and further developing the theory of social presence developed by Short, et al. (1976). They argued, based on their experience and research, that participants in online discussions, using text alone, can project their personalities into

online discussions and create a social presence (Swan, 2003; Swan & Shih, 2005). They found that online learners can present themselves as being “real” as well as “connect” with others when communicating in online learning environments by doing such things as using emoticons, telling stories, and even using humor (Rourke et al., 2001; Swan, 2003). Thus, a user’s perceptions of social presence and the behaviors used to make up for the cues that are filtered out matter just as much, if not more, than a medium’s supposed capabilities. This new line of research sparked a renewed interest in the sociability of online learning, social presence, and CMC as evidenced in the increased amount of literature focused on social presence.

Social presence is now a central concept in online learning. For instance, social presence has been listed as a key component in theoretical frameworks for learning networks (Benbunan-Fich, et al. 2005) and distance education (Vrasidas & Glass, 2002). Researchers have shown—in varying degrees—a relationship between social presence and student satisfaction (Gunawardena, 1995; Gunawardena & Zittle, 1997; Richardson & Swan, 2003), social presence and the development of a community of learners (Rourke, et al. 2001; Rovai, 2002), and social presence and perceived learning (Richardson & Swan, 2003). Just as earlier researchers of CMC (Kiesler, 1986; Kiesler, et al 1984) used social presence theory to explain why CMC was inherently impersonal, later researchers (Gunawardena, 1995; Tu, 2000) reconceptualized social presence theory—focusing less on the medium and more on people—to explain how CMC in online learning environments can be very personal and social.

Social Presence and Online Learning

Social presence theory has a complex history. To better understand how this complex history has evolved over the years, it is important to look at influential and related research on social presence, competing theories of social presence, and finally, some ways that contemporary researchers define, operationalize, and study social presence.

Influential and Related Research on Social Presence

Short, Williams, and Christie were members of the Communications Studies Group (CSG) at the University College in London. The CSG consisted of roughly 30 researchers conducting experiments in the 1970s on communication media (Pye & Williams, 1978). Interestingly, *The Social Psychology of Telecommunications* appears to be the only joint publication of Short et al. Despite this, each of them conducted many studies on the effects of communication media during the 1970s (e.g., Short, 1974; Christie & Holloway, 1975; Christie & Kingan, 1977; Williams, 1975; Williams, 1977; Wilson & Williams, 1977). Their research focused on comparing people’s attitudes toward different communication media (e.g., face-to-face, audio, video). The following paragraphs will briefly summarize a few key findings from this early

research that later influenced the development of and people's understandings of social presence theory.

The majority of their early research focused on the assumed importance of the visual channel of communication. Short (1974), Christie (1974), and Williams (1975) initially found that communication media were strengthened by the addition of a visual channel. Christie (1974) reported from one study that, visual media were ... more useful for complex group discussions, private conversations, and non-private dyadic conversations. Thus, the presence of a visual channel appears to be perceived as an important advantage of a communications medium.

However, as more research was conducted (e.g., Christie & Kingan, 1977; Williams, 1975) it became apparent that the value of a visual channel was more situational than originally thought. For instance, research began to show that the importance of a communication medium depended largely on the task at hand. In fact, according to Christie (1974), "it is misleading to conceptualize different media as lying along a single dimension of acceptability or usefulness. Their perceived usefulness varies according to the application considered" (p. 368). People might want a less intimate or immediate communication medium for certain tasks (Williams, 1975). For instance, Williams (1975) suggested: "that with tasks of very high intimacy—perhaps very embarrassing, personal or conflictual ones—the least immediate medium, the telephone, would lead to more favorable evaluations than either or the more immediate media" (p. 128). Further, Williams (1978a) showed that tasks that are low on interpersonal involvement and cooperative can easily be accomplished by audio or video conferencing; however, tasks that are higher on interpersonal involvement "are sensitive to the substitution of telecommunications for face-to-face interaction".

For the most part, these early communication researchers were not concerned with the role of the visual channel of communication in educational or instructional tasks. Williams (1978a) though argued that "tele-education seems especially promising since educational activities are primarily for cooperative problem-solving and the transmission of information—activities which are almost unaffected by the medium of communication used" (p. 129). Williams (1978a) intelligently pointed out though in the very same article that our knowledge about the role of mediated communication is far from complete—as was our understanding of how people learned in the late 1970s.

Their later research, among other things, showed that while visual cues are helpful, they are not necessary for people to communicate effectively (Christie & Kingan, 1977). Also, contrary to previous theories, Williams (1978b) found that physical presence may be even more important

for people communicating than visual communication. Results like these began to call for a more complex explanation for the role of visual cues in the communication process, which Williams (1978b) thought might be found in social presence theory.

Competing Theories of Social Presence

The theory of social presence developed by Short et al. (1976) was only one of several theories used to explain the influence communication media have on communication. Three popular competing theories of social presence—especially during the 1980s—were Cuelessness Theory developed by Rutter (1984, 1987), Media Richness Theory developed by Daft & Lengel (1984, 1986; Daft, Lengel, & Trevino, 1987), and Social Information Processing Theory developed by Walther (1996; Walther & Parks, 2002). The first two theories (like the Social Present theory) have been described as deficit models because they focus on the cues that are filtered out while idealizing face-to-face communication as the gold standard of communication (Thurlow, Lengel, & Tomic, 2004).

Each of these competing theories will be addressed briefly in the following sections to illustrate the zeitgeist of the 1980s and early 1990s—a time that led to the reconceptualization of Short et al.'s theory of social presence.

Cluelessness. Working from a similar theoretical framework as Short et al. (1976), Rutter (1984, 1987; Rutter, Pennington, et al 1984; Kemp & Rutter, 1986) developed the cluelessness model. Rutter was concerned with the over-emphasis placed on the importance of eye-contact when two people communicate. As a result, he and his colleagues (1984) set forth to challenge the intimacy model developed by Argyle & Dean (1965) and later Argyle & Cook (1976). They argued that previous research had focused too much on looking and eye-gaze and not enough on mutual gazing back and forth. Like Williams before, Rutter et al. (1986) found that what matters when communicating is visual access to the entire person rather than simply access to another's eyes. Rutter et al. argued that it was the combined social cues from vision and other senses that mattered more than simply eye contact.

The cluelessness model essentially claims that the fewer social cues, the greater the psychological distance between two communicators (Rutter et al., 1984). Further, Rutter and his colleagues argued that the greater the psychological distance between two people the more likely communication will be task-oriented and depersonalized (Kemp & Rutter, 1986; Rutter, 1984; Rutter et al., 1986). Rutter (1989) and colleagues found that the number of social cues—that is, both visual and physical presence cues—decreased when people used closed-circuit

television (i.e., visual cues), versus a curtain and wooden screen (i.e., no visual cues), versus audio (i.e., neither visual nor physical cues) to communicate with each other.

Media Richness. Another competing theory that emerged during the 1980s is the theory of media richness. Daft and Lengel (1984, 1986) developed the theory of Media Richness. Whereas Rutter and colleagues were aware of the work of Short et al., Daft and Lengel never explicitly acknowledge the work of Short et al. (1976). Daft & Lengel (1984) focused primarily on information-processing behaviors in organizations. More specifically, they were interested in a concept they called information richness.

Richness is defined as the potential information-carrying capacity of data. If the communication of an item of data, such as a wink, provides a substantial new understanding, it would be considered rich. If the datum provides little understanding, it would be low in richness.

They posited that communication media can determine the richness of information (Daft & Lengel, 1986). They argued that face-to-face communication has the highest richness whereas numeric communication (e.g., spreadsheet with numbers) has the lowest. According to Daft and Lengel (1986), a “medium’s capacity for immediate feedback, the number of cues and channels utilized, personalization, and language variety” all influence its degree of information richness.

Social Information Processing. The last of the three competing models is the Social Information Processing model developed by Walther (1992, 1994, 1996). Walther developed his model in response to the previous “deficit” theories. Whereas previous researchers were interested in media effects across various communication media, Walther focused primarily on CMC. He criticized previous research, as addressed earlier in this chapter, for several reasons. First, the majority of the early research was conducted in experimental settings that failed to mirror how people communicate with different media in the real world (1992). Second, these early studies and researchers assumed that the absence of visual cues led to an absence of sociability. Third, they assumed that task-oriented communication lacked relational and social communication. And fourth, they failed to acknowledge that just as cues are filtered out, other cues are filtered into CMC and therefore CMC has some affordances that face-to-face communication does not (Walther, 1996; Walther & Parks, 2002).

Walther (1992) argued that human’s social nature is the same in CMC and face-to-face environments. Given enough time, he believed that people will find ways to compensate for any cues that are filtered out in CMC. The social information processing model essentially posits that given enough time, CMC can be very personal and even hyperpersonal (Walther, 1992, 1996). Previous research tended to put time restrictions that Walther believes diminished

the possibility of interpersonal and relational communication. Walther also found that previous interactions between communicators influenced how people communicated online. Further, Walther (1994) found that the possibility of future interaction influenced the degree to which people socially interacted online. Finally, he found that the way users used emoticons also influenced interpersonal communication online. In summation, Walther’s social information processing model argued that “given the same investment of time and commitment, relational quality in CMC will be the same as face-to-face communication” (Thurlow, et al, 2004).

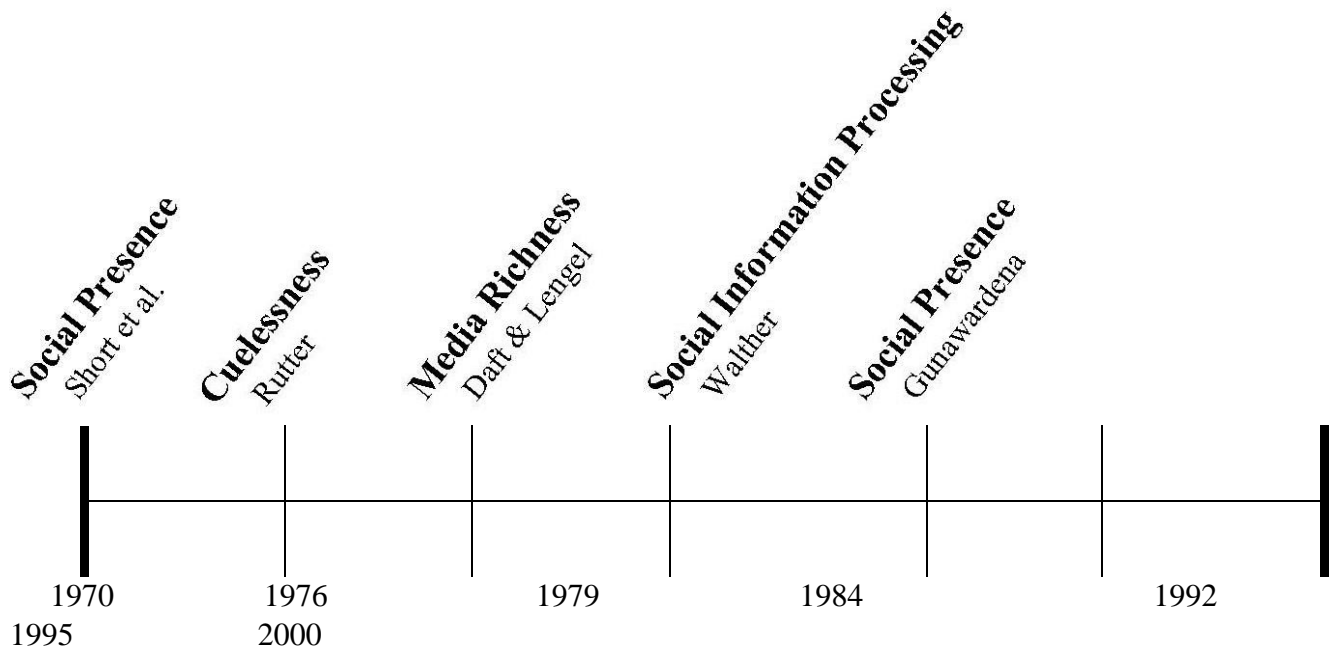


Figure 2. Timeline of Competing Theories of Social Presence

These competing theories, as illustrated in Figure 1, help illustrate the way that thinking about a medium’s effect on communication, especially interpersonal and social communication changed over time. Research on social presence and online learning, that began with the work of Gunawardena (1995; Gunawardena & Zittle, 1997)—which is considered the third phase of social presence research (see Table 2)—was influenced by this previous research and theories, especially that of Walther. Rather than conceptualizing social presence as Short et al. (1976) did, Gunawardena and those that followed her (most notably Garrison, et al 2000) began reconceptualizing social presence theory moving away from a technological deterministic conceptualization of mediated communication.

Table 2: Phases of Social Presence Research

Phase	Period	Key Figures	Focus of Research
Phase 1	1970s	Short et al.	Focused on Telecommunications
Phase 2	1980s-early1990s	Rutter Daft & Lengel Kiesler Walther	Focused on CMC
Phase 3	Early/mid-1990s-Present	Gunawardena Rourke et al. Tu Swan	Focused on Online Learning

Defining Social Presence

Given the evolution of social presence theory, it is probably not surprising that there is not a clear, agreed, definition of social presence (Rettie, 2003; Tu, 2002b). Nearly everyone who writes about social presence seems to define it just a little differently. To complicate matters, related terms such as presence, copresence, and telepresence are used to describe similar things (and sometimes even the same thing) as social presence.

Presence is a key theoretical construct used in a variety of disciplines besides communication and online learning, most notably virtual reality (Biocca, 1997). Lombard & Ditton (1997) identified six interrelated (and cross-disciplinary) but distinct ways people understand “presence”: (a) presence as social richness, (b) presence as realism, (c) presence as transportation, (d) presence as immersion, (e) presence as a social actor within the medium, and (f) presence as medium as a social actor. They even attempted to create one all-encompassing definition of presence. According to Lombard and Ditto, the following definition takes into consideration all six ways presence is understood; presence is “the perceptual illusion of non-mediation” (presence explicated section). To date, though, Lombard and Ditto’s all-encompassing definition has not received widespread adoption, especially by researchers of online learning. Lombard and Ditton, though, were not alone; Biocca, et al. (2003) also recognized the different ways researchers across different fields’ defined presence. They also created an all-encompassing definition of social presence; they defined social presence as simply the ‘sense of being with another’ whether that other is human or artificial.

Despite attempts by Lombard & Ditto (1997) and Biocca et al. (2003) to develop some conceptual clarity about presence in general or social presence in particular, researchers of social presence and CMC in educational environments continue to redefine and categorize social presence (Picciano, 2002). For Gunawardena (1995), social presence was “the degree to which a person is perceived as a ‘real person’ in mediated communication”. Garrison et al. (2000), on the other hand, defined social presence “as the ability of participants in a community of inquiry to project themselves socially and emotionally, as ‘real’ people (i.e., their full personality), through the medium of communication being used”. Tu & McIsaac (2002) defined social presence as “the degree of feeling, perception, and reaction of being connected by CMC to another intellectual entity through a text-based encounter”. Finally, for Picciano (2002), social presence in an online course “refers to a student’s sense of being in and belonging in a course and the ability to interact with other students and an instructor”.

Definitions of social presence, at least for researchers of social presence and online learning, tend to fall on a continuum. At one end of the continuum, researchers tend to conceptualize social presence as the degree to which a person is perceived as being “real” and being “there.” These definitions tend to focus on whether someone can project him or herself as being “real” in an online environment and whether others perceived this person as being there and being real. Williams (1978a) defined social presence in this way when he defined social presence as “the feeling of contact obtained...” across various communication media. At the other end of the continuum, researchers tend to go beyond whether someone is perceived as being “present” that is, simply “there” or “real” but focus on whether there is an interpersonal emotional connection between communicators. It is important to note, though, that on this end of the continuum, there tends to be an assumption that the interpersonal and emotional connection that communicators establish when there is social presence is a positive connection (Wise, et al. 2004). Finally, like most continuums, the majority of researchers find themselves somewhere in the middle placing a little bit of emphasis on an emotional connection rather than on the ends of the continuums.

Operationalizing and Measuring Social Presence

The differences in how researchers define social presence might seem minor but they end up having significant consequences on how people conceptualize social presence in online learning. For instance, Garrison et al. focused on students' (or instructors') ability to project themselves as “real” whereas Picciano focused more on students’ sense of belonging to a

community. Issues of definition are important because the way researchers define social presence influences how they measure social presence and the conclusions they draw.

After all the theorizing, researchers need to be able to identify, measure and test their theories about social presence. As researchers of CMC and online learning began to re-conceptualize social presence, rather than use the techniques developed and utilized by past researchers perhaps in part because of Walther's critique of these techniques they began to look for new ways to study social presence. Gunawardena & Zittle (1997), Rourke et al. (2001), and Tu (2002b) have each been very influential in developing ways to study social presence. But just like in the mid-1970s when researchers either studied social presence by observing user behavior or examining users' attitudes (Christie, 1974) researchers in this third wave of social presence research have tended to either focus on users' attitudes or behaviors online. For instance, Gunawardena & Zittle as well as Tu focused primarily on studying user's attitudes whereas Rourke et al. focused on studying user's behaviors. Regardless of their focus, these researchers have heavily influenced most of the studies on social presence and CMC. Therefore, in the following paragraphs, a summary of how each of these researchers studied social presence will be given.

Social Presence Scale. Gunawardena (1995; Gunawardena & Zittle, 1997) conducted some of the earliest studies on social presence and CMC in an education setting. In her first article, Gunawardena (1995) had students rank 17 bipolar scales on a 5-point Likert-type scale (from negative to positive). For instance, she asked students whether CMC was more sociable or unsociable or warm or cold. The bipolar scales she used appear to focus on the user's perceptions of the medium more than the degree to which others are perceived as "real" or "there." In a later more influential article, Gunawardena & Zittle (1997) reported on additional data collected with an instrument called the Social Presence Scale. The Social Presence Scale was similar to the previous scale used by Gunawardena, but instead of responding to bi-polar scales (which were similar to the semantic differential technique used by Short et al.), students were asked to rank 14 questions on a scale of 1 to 5. For instance, one question asked students to rank, on a scale of 1 to 5, to what degree they agree or disagree that CMC is an excellent medium for social interaction. The Social Presence Scale was tested for internal consistency ($\text{Alpha} = .88$); Gunawardena and Zittle concluded that it investigated the construct of social presence more directly than the previous scale.

Social Presence Indicators. Unlike Gunawardena and Zittle who measured social presence through a self-report questionnaire, Rourke et al. (2001) sought to measure social presence by

analyzing online discussions. Rourke et al. identified three different categories of social presence: affective responses, interactive responses, and cohesive responses. They then developed twelve indicators that researchers could use to analyze transcripts of CMC (primarily through content analysis). For instance, the indicators of affective responses are the expression of emotions, the use of humor, and self-disclosure. Rourke et al. developed these categories and indicators based on their previous work (Garrison, et al, 2000; Rourke, et al, 2001), other literature in the field, and finally, their experience reading online transcripts.

Rourke et al. tested and measured the “efficacy and reliability” of their categories and indicators by using them with participants in two graduate education online courses. Other than latent variables (e.g., expression of emotion and use of humor), they had high interrater reliability. However, Rourke et al. cautioned readers about generalizing their results because their main purpose was to “develop and test the efficacy of a tool for analyzing the social presence component of educational computer conferences” (Discussion section) rather than to draw conclusions specifically about the samples in question. They also acknowledged that they were still unclear whether all 12 indicators should be weighted equally—which later researchers questioned (Hughes, et al. 2007)—as well as whether or not there is an optimal level of social presence. Garrison mentioned in a round table presentation at the 2008 annual meeting of the American Educational Research Association (AERA) that these indicators might need to be revisited to ensure that they do not need to be revised (Arbaugh, et al. 2008).

Social Presence and Privacy Questionnaire. Tu (2002b) criticized early research on the social presence that used the same semantic differential technique as Short et al. (1976) (e.g., Gunawardena, 1995). Tu argued that this technique is not an adequate measure of one’s perception of social presence when it comes to CMC. He also argued that the Social Presence Scale developed by Gunawardena and Zittle (1997) failed to take into consideration different variables cited in the research (e.g., recipients, topics, privacy, task, social relationships, and communication styles). As a result, Tu (2002b) developed The Social Presence and Privacy Questionnaire (SPPQ). Tu developed the SPQQ by using parts of Steinfield’s (1986, as cited in Tu, 2002b) CMC attitude instrument and Witmer’s (1997, as cited in Tu, 2002b) perceived privacy instrument.

Tu tested the content validity and the construct validity of his instrument. Five factors emerged from the factor analysis: social context, online communication, interactivity, system privacy, and feelings of privacy; these five factors accounted for 82.33% of the variance with Cronbach’s alpha values ranging from .74 to .85. While Tu acknowledged that online privacy

had a weak correlation and therefore might not need to be included as a dimension of social presence, he continued to use online privacy as a dimension of social presence in later studies (Tu & Corry, 2004; Tu & McIsaac, 2002). Despite the strengths of his survey, Tu & McIsaac (2002) later determined as the result of a mixed method study, using the SPPQ and a dramaturgy participant observation qualitative approach, that there are “more variables that contribute to social presence” than previously thought. Therefore, Tu & McIsaac concluded that social presence was more complicated than past research suggested. Specifically, they found that the social context played a larger role than previously thought.

These three examples are evidence that there is still little agreement on how to measure social presence (Lin, 2004; Stein & Wanstreet, 2003). Just as Tu criticizes how Gunawardena measured social presence, others have criticized and modified Tu’s work (Henninger & Viswanathan, 2004). Also, while social presence has been presented as a perceptual construct, Hostetter and Busch (2006) point out that relying solely on questionnaires (i.e., self-report data) can cause problems because “respondents may be providing socially desirable answers”. Further, Kramer, et al. (2006) point out that self-report data “are retroactive and insensitive to changes in presence over an interaction [or semester]”. But at the same time, even the scale created by Rourke et al. (2001a) has been modified by Swan (2003) and later by Hughes, et al (2007); moreover, Hughes et al. also questioned the usefulness of “reducing social presence to an overall number” as Rourke et al. did.

Researchers need “a multifaceted presence instrument, one that examines presence more than single items and addresses the construct more by evaluating specific behaviors rather than a global effect” (Russo & Benson, 2005). However, any multifaceted instrument would likely be influenced by the work of Gunawardena and Zittle (1997), Rouret et al. (2001), and/or Tu (2002b) because most researchers continue to use (or adapt) the instruments created by these researchers. Therefore, any study of social presence should at least acknowledge how its methodology has been influenced by these early pioneers.

Future Trends

Despite failing to meet initial estimates of growth (Shank & Sitze, 2004), enrollments in online courses and programs continue to grow dramatically each year (Allen & Seaman, 2006; Tallent-Runnels et al., 2006). This growth, coupled with the people’s concerns with the Internet, will nearly ensure that researchers, policymakers, and practitioners will continue to debate the sociability of the Internet and the role that online learning should play in our future. The third

wave of research on social presence will likely give birth to a fourth wave of research on social presence. During the fourth wave, it is likely that researchers will begin to employ multiple and mixed method approaches (e.g., like the work of Swan & Shih, 2005) of studying social presence that focuses on, among other things, the socially situated and contextual nature of social presence. Further, researchers and practitioners alike will have to consider a new host of things related to social presence with the continued blurring of boundaries between classroom and fully online courses as well as between course-bound communication tools (e.g., discussion forums) and non-course-bound tools (e.g., Facebook and Twitter).

Empirical Studies

This section covers the results of other works related to the study

Online Learning Platforms

Haji (2022) researched “*Students' use of online learning platforms to support blended Learning at Cameroonian University*”. This research provides insight into Cameroonian students' perceptions and attitudes toward participating in learning through an online learning platform. Also, the author discusses the implications of and potential uses for an online learning platform. Three hundred and eighty students from a public university in Cameroon participated in this study. A twenty-item quantitative questionnaire using a 5-point Likert scale was used in this study. The results showed that participants responded and favored all statements for ease of use. The results showed that the mean for ease of use was ($M = 4.71$, $S.D. = .606$). The favorable response shown here toward Google Classroom usability suggests that students had a great experience using Google Classroom in learning. Results showed that participants also have a high perception ($M = 4.81$, $S.D. = .677$) using Google Classroom. Overall, the majority of responses were positive for all the seven corresponding items concerning the educational use of Google Classroom. In particular, participants had positive attitudes towards Google Classroom's potential to promote interactions between student-teacher and student-student. Also, most participants' responses, using Google Classroom for sharing content (82%), indicated that Google Classroom's unique platform and functionality are ideal for educational pursuits, corresponding to participant attitudes toward Google Classroom's general ease of use. Concerning the instructional use of Google Classroom, results also showed positive attitudes. The results showed a mean of ($M = 4.67$, $SD = .684$). On average, the perception of instructional use was the highest. A very high score was on participants' ability to access information or communicate through Google Classroom for specific learning purposes, such as submitting

assignments and receiving feedback from students and instructors. The results confirmed that Students have a high perception of using online learning platforms for blended Learning in Cameroonian Universities.

Kuna (2012), examined the effectiveness of collaborative team projects using features provided by OLPs such as email and discussion boards and found that these features enhanced learning outcomes.

A similar study by Kirmizi (2015) examined the student experience of using OLPs finding some correlation between students' levels of OLPs use and student achievement.

Also, (AbdeljaberAlsoud & Yaseen 2021), examined "*The Effects of Online Learning on Students' Performance: A Comparison between UK and Jordanian Universities*" The study was aimed at investigating the impact of online learning on student performance by comparing the effect in Jordan and the UK. Both countries were reported to have high technological competency but were known to have varying socio demo-graphic structures. Surveys designs were used on undergraduate students from both countries and the sample size was 780 respondents (N = 780) to analyze students' perceptions of online learning, self-perceptions of academic capabilities, and faculty performance during online learning. Semi-structured interviews were conducted with professors from both countries (N = 8). The results findings indicate that both Jordan and the UK Universities, have been very similarly affected in terms of student performance, with communication being the major challenge to, technological competency, access to hardware for taking online classes by the students, absenteeism by students, and drop-outs. On the other hand, some benefits to student performance were identified as having access to recorded lectures, having more access to faculties through e-mail, and extended office hours. Ethical implications were not commented on. Privacy concerns were largely voiced by faculties.

Similarly, a study was also carried out (Mahruf & Shohel 2022), on "*E-Learning and Digital Education in the Twenty-First Century*"

This study was tailored toward investing in the impact of online learning using technology in virtual classrooms and the effect of performance factors on students' learning behavior and achievement. The sample of this study was made up of 6045 students, which were collected from the enrolment of University College students in spring 2020, at United Arab Emirates University has used an online teaching strategy in comparison to the fall 2019 teaching/learning experience, which used conventional teaching from a total population of 7369 students.

Descriptive statistics were obtained to summarize the sample characteristics and performance variables. Pearson Correlation was used to evaluate the correlation between the learning outcomes dimensions. Independent Samples t-test was used to compare the mean overall performance of online learning. Linear Regression was used to determine the impact of the learning characteristics (Critical thinking, Creativity, Communication, and Collaboration) on the overall performance score. Factor Analysis was used to study the inter-relationships among the learning characteristics and compare the online methods. This study showed the learning outcomes are similar for both virtual and conventional learning, although the assessment methods are different.

Furthermore, Research on the efficacy of ICT-based teaching methods in improving generic skills in addition to content skills among the future workforce is increasing. Accordingly, this study investigated the impact of E-learning on the creativity and content knowledge of chemistry students at the Payame Noor University of Hamedan, Iran. The study used the pre-test/post-test experimental design with a control group. The statistical population of the study included 100 pure chemistry students who were following two separate classes. Forty students were selected from this group and placed in the experimental group, ($n = 20$) and the control group ($n=20$). Two instruments were used for data collection; a specifically developed test on the Introduction to Chemistry course and the Abedi Inventory for assessing creativity. Results of data analysis using the independent t-test (aided by SPSS) demonstrated statistically significantly higher scores for the experimental group on measured variables, knowledge, and creativity. Therefore, it is concluded that e-learning is effective for knowledge and creativity acquisition among chemistry students and greater- learning opportunities should be provided for wider audiences.

Keshavarz et al. (2013) concluded that online learning platforms have a positive impact on the academic achievements of students. Zarie, Zavaraki, & Rezaei (2011) in their study at the e-learning center at Khaje Nasir Toosi University concludes found that the use of e-portfolio significantly improved students' attitudes, motivation, and academic achievement. Mahmoud et al. (2015) found that the use of online learning in the physiology teaching-learning process improves students learning and creativity. Zare et al. (2015), also found \ that the learning and recollection of students who were educated in multimedia methods are more than the learning and recollection of students who were educated in the traditional methods.

A review of the study conducted in the field of E-learning application and its impact on learning and creativity suggests that the use of this teaching method in the teaching-learning

process can lead to the effectiveness of training. The emergence of new theories of teaching and learning has made education shift from being teacher-oriented to being student-oriented. Moreover, the development and evolution of new communication devices have enabled modern man to use modern methods of teaching and learning and get free from time and space barriers and keep on learning at any time and place according to his needs and demands (Hosseini et al., 2015).

The use of electronic technologies has led to the development of educational opportunities and helps students develop their skills. According to studies, the evidence shows that E-learning can have a profound and positive impact on learners' involvement, positive attitudes of teachers, personalized learning, and learners' creativity (Magnoson et al., 2010). Negash & Wilcox (2008), quoted in Mahmoodi et al. (2015), suggest that there are six different types of e-learning. These six types are presented below:

Moreover, another study was conducted by Dixson in 2010. While this paper set out to discover what activities and/or interaction channels might be expected to lead to more highly engaged students, what it found was a bit different. After first creating a scale to measure online student engagement, and then surveying 186 students from six campuses in the Midwest, the results indicate that there is no particular activity that will automatically help students to be more engaged in online classes. However, the results also suggest that multiple communication channels may be related to higher engagement and that student-student and instructor-student communication is strongly correlated with higher student engagement with the course, in general. Thus, advice for online instructors is still to use active learning but to be sure to incorporate meaningful and multiple ways of interacting with students and encouraging/requiring students to interact with each other.

Supnithi (2018), this study proposed and examined the effectiveness of E-learning content design by considering two different subjects (mathematics and reading) and areas (metropolitan and rural). This study also investigated several variables, that as students' satisfaction, motivation, and experience, that influenced learning abilities. Moreover, we suggest ways of improving the effectiveness of online learning for different kinds of students, subjects, and areas. This study was planned to explore the impact of online learning on the academic performance of student-teachers. The researchers' concern with E-Learning was sanctioned by the need for a teaching and learning strategy that can help institutions of learning address their problems and improve their outcomes. In this respect, the researchers

experimented to find out whether student teachers taught using the method of e-Learning (blended learning) perform better than the student teachers taught using the traditional method of teaching and learning. Findings offer new evidence that E-Learning has a significant influence on the performance of students as student-teachers taught using E-Learning consistently performed better than student-teachers taught using the traditional method. Based on this result, recommendations are made to train institutions to embrace ICTs and become more flexible by adopting learning approaches that are dynamic and multi-dimensional as problems in education are becoming more complex.

Another related study was carried out by Sarikhani in 2016. Here he showed that research on the efficacy of ICT-based teaching methods in improving generic skills in addition to content skills among the future workforce is increasing. Accordingly, this study investigates the impact of E-learning on the creativity and content knowledge of chemistry students at the Payame Noor University of Hamedan, Iran. The study used the pre-test/post-test experimental design with a control group. The statistical population of the study included 100 pure chemistry students who were following two separate classes. Forty students were selected from this group and placed in the experimental group ($n = 20$) and the control group ($n = 20$). Two instruments were used for data collection; a specifically developed test on the Introduction to Chemistry course and the Abedi Inventory for assessing creativity. Results of data analysis using the independent t-test (aided by SPSS) demonstrated statistically significantly higher scores for the experimental group on measured variables, knowledge, and creativity. Therefore, it is concluded that e-learning is effective for knowledge and creativity acquisitions

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learning and creativity suggests that the use of this teaching method in the teaching-learning process can lead to the effectiveness of training. The emergence of new theories of teaching and learning has made education shift from being teacher-oriented to being student's-oriented. Moreover, the development and evolution of new communication devices have enabled modern man to use modern methods of teaching and learning and get free from time and space barriers and keep on learning at any time and place according to his needs and demands (Hosseini et al., 2015). The use of electronic technologies has led to the development of educational opportunities and helps students develop their skills. According to studies, the evidence shows that online learning can have a profound and positive impact on learners' involvement, positive attitudes of teachers, personalized learning, and learners' creativity (Magnoson et al., 2010). Negash & Wilcox (2008), quoted in Mahmoodi et al. (2015), suggest that there are six different types of e-learning.

Instructor's online presence

Costley and Lange, Gongju, & Geumsan, (2016), carried out research entitled "The Effects of Instructor Control of Online Learning Environments on Satisfaction and Perceived Learning". Their study looked at broad-based instructor decisions to see if online environments with higher levels of instructor control could lead to higher levels of student satisfaction and/or perceived learning. Three different online environments were used, with each one containing progressively more instructor control. This study had 219 participants and the participants were students at a national university in Korea. The study was implemented in blended learning classes that focused on the improvement of writing skills and the development of understanding of key teaching issues such as classroom management and delivering instruction. The goal of the course was to provide the students with adequate preparation for the Korean teachers' entrance exam. The results showed that there were no significant differences in regard to mean levels of satisfaction between the three environments. However, there were significant differences among mean levels of perceived learning based on the differing instructor-controlled environments. This study shows that increasing the levels of instructor control within online environments leads to an increase in perceived learning.

Similarly, (Darabi, Dennen, & Smith, 2007) found that, supporting the frequency of contact between the students and the instructors, having a regular presence in class discussions, and making expectations clear to learners are three practices suggested for instructors to adopt in enhancing learner-instructor interaction during learning.

Learning content

Furthermore, (NarangYadav, & Rindfleisch 2021), Conducted a research work entitled “The Idea Advantage”: How Content Sharing Strategies Impact Engagement in Online Learning Platforms”.

This study was out to examine the issue by assessing the impact of two different types of content sharing on learner engagement. The researchers conducted a textual analysis of over 12,000 text postings during 18 months and a field experiment among over 2,000 learners in one popular Coursera offering by a large U.S. university. The results of the findings indicate that asking learners to share ideas (vs. their identity) has a stronger effect on their video consumption and assessment completion. Thus, the authors explained this “idea advantage” by suggesting that learners/students who share ideas (vs. identity) exhibit a greater degree of elaboration. This idea advantage is strongest for learners from English-speaking countries and those new to online learning.

Eirini (2015) found out that, Online Learning Platforms offer content such as slides, videos, blogs, and other resources designed to support existing course content and students who engage in large amounts of interaction with course content, using extra learning materials and resources to supplement classes, do so to support work with assignments.

A similar study, by Murray et al. (2012), also found that students tend to access only well-designed instructional materials help to improve the interactions between the instructor and students, and among students.

Interaction.

(Almaleki, Alhajaji & Alharbi 2021), investigated “*Measuring Students' Interaction in Distance Learning Through the Electronic Platform and its Impact on their Motivation to Learn During Covid-19 Crisis*”. This study was aimed at measuring students' interaction in distance education through the use of electronic platforms among intermediate school students, by identifying the level of students' interaction in distance education and differences between them, as well as its impact on their motivation to learn. Two scales were designed for this study and were applied to a sample consisting of (268) students. The results showed that the level of students' interaction through the e-learning platform was at a high level. The results also showed that there was no statistically significant difference between the mean scores of males and females on the scale of students' interaction through the e-learning platform. There was no

statistically significant difference between them in their motivation for distance learning through the online learning platform. There were also no statistically significant differences related to the grade variable in the level of interaction through the electronic platform and in the motivation to learn, while there was a positive statistically significant effect of interaction through the electronic platform on students' motivation to learn.

Sun, Ting, Sha, Gu, Hou, Zhu & Fang 2022 carried out an investigation entitled “The Influence of Teacher-Student Interaction on the Effects of Online Learning: Based on a Serial Mediating Mode”. This study was aimed at investigating the teacher–student interaction in online learning and its’ effect on students’ learning performance. This study employed a questionnaire survey to explore the influence teacher–student interaction on learning effects in online education as well as the mediating role of psychological atmosphere and learning engagement. This study was made up of 398 college students studying at Chinese universities as the research object. Participants filled out a self-report questionnaire. The study found that the level of teacher–student interaction positively affected students’ learning effects ($r = 0.649, p < 0.01$). Also, the psychological atmosphere mediated the positive effect of the level of teacher–student interaction on learning effects with mediating effect value of 0.1248. Furthermore, learning engagement mediated the positive effect of teacher–student interaction on learning effects with a mediating effect value of 0.1539. The psychological atmosphere and learning engagement play a chain-mediating role in the mechanism of teacher–student interaction affecting students’ learning effects; that is, teacher–student interaction promotes students’ learning engagement by creating a good psychological atmosphere, which, in turn, influences learning effects. The mediating effect value was 0.0403. The psychological atmosphere and learning engagement play a chain-mediating role in the mechanism of teacher–student interaction affecting students’ learning effects; that is, teacher–student interaction promotes students’ learning engagement by creating a good psychological atmosphere, which, in turn, influences learning effects. The mediating effect value was 0.0403. The results indicate that teacher–student interaction not only directly affects students’ learning effects but also influences students’ learning effects through the mediating effect of the psychological atmosphere and learning engagement

Also, Tang & Lam (2014) researched the effectiveness of online discussion boards as a way to build a collaborative learning community and found that they can promote online interaction, specifically during collaborative activities. The more messages that the students posted on discussion boards, the higher levels of achievement they reached in the course (Singh & Yu,

2018). The essence of interactive learning is that the content is organized in such a way that almost all students are involved in the learning process, they have the opportunity to understand and reflect on what they know and think.

Similarly, Heijstet *et al.*, 2019) found out that, Interaction among students enhances student engagement in learning and creates a sense of an online learning community, giving them a feeling of connection as they share ideas, participate in learning and construct knowledge. Students who have a high degree of engagement in these types of interactions will also use features of OLPs to support such interactions thus, high performance (Shelton *et al.*, 2017).

Perceive use

(Oyarzunet *et al.*, 2018; Rhode, 2009; Yuen et al., 2009) studies showed the importance of instructors to ensure that, learners are shown ways to integrate the OLPs into their learning. Similarly, Izmirli's (2017) research work showed that Students may have negative notions about what to expect from the content found on OLPs, thereby affecting their performance negatively. Instructors' relationships with students can deter some of these negative preconceptions and highlight the importance of OLPs for teaching (Zimmerman, 2012). By promoting student engagement with OLPs and guiding them on ways to use them, high levels of learner-instructor interaction will lead to more frequent use of OLPs, leading to high performance.

Similarly, a study carried out by Aguilar (2020) “*Students' perceptions on the use of an online platform for language learning*». The purpose of the study was to know the initial and final perceptions of the use of an online platform by students as support for language learning. The platform used in this study was Edmodo, which has an application for smartphones, as well as a website. This research was carried out on 15 EFL learners who were studying the first semester of high school in Mexico the platform was used for two months and to collect data a mixed-methods approach was used. Questionnaires were administered before starting the implementation to all the students. Six interviews were conducted before and after the implementation using the maximum variation sample method. The results of this study indicated that initially, the learners had a positive perception of the implementation of the platform in teaching. At the end of the implementation, the students expressed satisfaction but suggested improvements in communication, as well as personalized activities. Some initial perceptions of the students changed since they thought it would be difficult to use it, however, other internal and external factors caused the students to stop submitting their activities at the end of the implementation. Students mainly perceived the platform as a way to review the

contents in class differently. The availability of the contents of the course was perceived also as an advantage, as well as flexibility. Some students were also able to find new ways to review the topics seen in class and learn vocabulary. Above all, an investigation was carried out by (Annamalai, Pinang, Osman, & Skudai 2021),

Investigating “*the Use of Learning Management System (LMS) for Distance Education in Malaysia: A Mixed-Method Approach*”. The mixed-method study investigated the use of Learning Management Systems (LMS) for distance education in Malaysia using the extended Technology Acceptance Model (TAM). Limited studies on LMS for Malaysia higher education studies focusing on distance learning are warranted due to the diversity of resources, maturity, and education as working adults contrasting from traditional undergraduates. The survey of 205 respondents revealed that the extended TAM, which includes perceived resources, explained variance in attitudes ($R^2 = 56.2\%$) and actual use ($R^2 = 34.5\%$) adequately. Concurrently, indicating perceived ease of use and perceived resources as a determiner for the attitude which predicts actual use. Subsequently, a semi-structured interview with 15 respondents supported this as it was inferred that respondents’ attitude was mainly determined by their perception of the role of LMS to facilitate learning activities. Furthermore, inconveniences in accessing learning contents and lack of interactive learning activities are the respondents’ primary concerns, reflecting on the predictive role of perceived ease of use. The findings also provide appropriate guidance for the pedagogical design and LMS implementation for distance education based on affordance and inclusivity.

CHAPTER THREE

METHODOLOGY

This chapter examines the methodology used in this study, including the research design, the population of the study, the development of the instrument, the participants' characteristics, the sampling procedure, and the data collection and analysis techniques. The purpose of this study is to explore how the frequent use of online learning platforms (OLP) mediates between an instructor's online presence, learning content, interaction user interface design, and students' performance in higher institutions in Cameroon.

Area of Study

The Cameroon Higher educational system has expanded over years, especially with the birth of State Universities in all ten regions of Cameroon including private universities and private higher institutions. This is due to the increased population, and increased participation by the school-age population and working population. One Federal university, the University of Yaounde created in July 1962 (Tafah, 1989) served Cameroon until 1972. This was the only university created to tailor development for the country and equally make the country to be known academically in an international setting. Ahidjo (1964) opined that a university was to bring among others, rational development of teaching at all levels, science, and technology adopt the indigenous pattern of education than foreign, pursue vigorously and consolidate universities and the independence of Cameroon.

The Cameroon government in 1981, created four university centers viz Dschang, specializing in Agriculture, Douala in Business and Commercial Studies, Ngaoundere in Food Technology, and Buea in Translation and Arts. By decree, N° 93/026 of 19th January 1993, reorganizing university education in Cameroon and the pursuit of academic excellence, the University of Yaounde was segmented into Yaounde 1 and 2 while the four university centers were raised into full-flesh universities. Then came the third-generation state universities of Maroua in 2008 and Bamenda in 2010.

Due to the continuous request for quality accessible higher education. In 2022, to further bring Higher education to the doorsteps of Cameroonians, the Universities of Bertoua, Ebolowa, and Garoua were created by Presidential decree and has been a breakthrough for the promotion of quality assurance and good governance in Higher Education institutions found in all the ten regions of the country. The study was carried out in Higher Institutions in Cameroon because

it is observed that more learners in Higher Institutions in Cameroon perform poorly in terms of low output and digitalization and this is a result of the country's statuesque system to fully embrace technology on how this affects students' performance negatively. This is a result of numerous studies on students' performance focusing on elements like the Instructor's online presence, Learning Content, Interaction, and Perceive Use, which play a significant role in maintaining students' performance positively.

Research Approach

For the researcher to gather as much information as possible about the subject issue, quantitative research methodology was used in the study. Numerical data might turn into useful statistics produced through quantitative approaches. This was used to measure attitudes, beliefs, actions, and other predetermined factors as this will go along to help the researcher to generalize her findings from a larger sample size. Key respondents in this study were postgraduate/master's students of the 2020/2021-2022 academic years and the objectives of this study required factual data from the quantitative paradigm. This technique was useful in gathering data for recommendations on workable actions that would be taken to students' performance in Higher Institutions in Cameroon thereby, promoting online learning platforms in these Higher Institutions.

Research Design

This is a systematic plan to study a scientific problem. According to Amin (2005), a research design is the conceptual structure within which the research is conducted and constitutes the blueprint for the measurement of variables collection and analysis of data. This study which was intended to do a survey was carried out using the correlational research approach.

The descriptive survey design was used in this study. This methodology allowed the researcher to present the findings and discuss the current situation, collected information from a sample of postgraduate (Master) students at one point in time in Higher Institutions in Cameroon, concerning students' performance concerning online learning platforms (Haji, 2022). Kothari (2008) asserts that descriptive surveys are effective in gathering information about demographic characteristics that can be used to support present conditions and procedures. The design entails gathering relevant and accurate information about the phenomenon's current state and, whenever possible, concluding the facts that have been uncovered (Orodho 2008). Descriptive surveys are mostly used to gather the information that helps assess current processes and offer for decision-making. The effect of online learning platforms on students' performance in

Higher Institutions in Cameroon was thoroughly described in this study's descriptive survey, and it is possible to extrapolate these findings to other regions of Cameroon. This study's design included adequate safeguards to minimize bias and increase reliability. A survey is most frequently used in the non-experimental design and is assumed mostly suitable for theory testing.

The population of the study

The population is a well-defined collection of individuals or objects known to have similar characteristics (Amin, 2005).

The population of this study comprises all the postgraduate/master's students of the 2020/2021-2022 academic years of Higher Institutions in Cameroon because it is where the researcher noticed this problem.

Target Population

The target population for the study consisted of postgraduate (Masters) students in the Faculty of Education who stood at 2536 as of the academic year 2020-2021 and 2021-2022 academic years, in the University of Yaounde 1, University of Buea, and University of Bamenda. Nevertheless, a sample of 327 students was for this study.

Table 2: Target Population

S/N	Name of institution	Departments						
1	University of Yaounde1 (UY1)	CEV 171	EDS 30 3	EFE 151	DID 363	IOE 274	MED 838	Total 2100
2	University of Bamenda (UBa)	CPY 39	CUP 12	EDL 20	EPY 39	PEA 8	TED 10	Total 128
3	University of Buea (UB)	CST 70	EDUTECH 19	EFA 80	EPY 94	SPE 43	-	Total 308
Total								2536

Source: Fieldwork 2022

Out of the 327 questionnaires that were distributed to postgraduate (masters) students of the University of Bamenda (UBa), University of Yaounde 1 (UY1), and University of Buea (UB), 60 were online in Google form while 267 Questionnaires were administered face-to-face. Out of the 60 online questionnaires distributed, the respondents responded to all of them, giving a percentage of 100%. Also, out of the 267 Questionnaires administered face-to-face, 267 were returned, given a percentage of 100%. So, a total of 327 questionnaires were returned 327, given

a return rate of 100%. Hence, the participants of this study consisted of 327 postgraduates' (Masters') students of the University of Yaounde 1 (UY1), University of Bamenda (UBa), University of Buea (UB) of the Faculty of Education, for the 2021-2022 academic year who volunteered while taking their courses during the 2021-2022 academic year. The participants were, CEV M1 & M2, EDS M1 & M2, EFE M1 & M2, DID M1 & M2, IOE M1 & M2, MED, postgraduate students of Education in the University of Yaounde 1 (UY1), CPY course work and research, CUP course work and research, EDL course work and research, EPY course work and research, PEA course work and research, TED course work and research postgraduate students of Education in the University of Bamenda (UBa) and CST course work and research, EDUTECH course work and research, EFA course work and research, EPY course work and research, SPE course work and research postgraduate students of Education in the University of Buea (UB) respectively.

A total of 327 respondents were involved in this study, and out of this number, 207 (63.3%) are from the University of Yaounde 1 (UY1), while 70 (21.4%) are from the University of Bamenda (UBa), and 50 (15.3%) are from the University of Buea (UB). As for the faculty, all the respondents were from the faculty of Education from the three Universities under study. As for the Department, 1009 respondents were from the CEV department, 303 respondents were from the EDS department, 151 respondents were from EFE, 363 respondents were from DID, 274 respondents were from IOE, of the University of Yaounde 1, (UY1), 39 respondents were from CPY, 12 respondents from CUP, 20 respondents were from EDL, 39 respondents were from EPY, 08 respondents were from PEA, and 10 respondents were from TED department of the University of Bamenda (UBa). With regards to Gender (include figure) are male while (include figure) are female. As concerned Age, (include figure) respondents were between the age of 20-25 years, while (include figure) were between the age of 26-30, and (include figure) respondents were 30+. With regards to online learning platforms used in these Higher Institutions, the researcher found out that the University of Yaounde 1 (UY1) uses Google Classroom, the University of Bamenda uses Google Classroom, and the University of Buea uses Google Classroom, Moodle, and Google Meet.

Accessible Population

The accessible population for the study consisted of post graduate (Master) students in the Faculty of Education who stood at 327 as of the academic year 2020-2021 and 2021-2022

academic years, in the University of Yaounde 1, University of Buea, and University of Bamenda.

Table 3: Distribution of accessible population

N ^o	Name of Institutions	Number of students	Percentages
1	University of Bamenda (UBa)	17	5%
2	University of Buea (UB)	41	12.15%
3	University of Yaounde 1 (UY1)	269	82%
Total		327	100%

Source: Fieldwork 2022

Simple Random Sampling Technique

Mbua (2003) opines that, it is the way or method, which the researcher uses to select the exact number of items or persons he will work with. Sampling is the process of selecting elements from a population in such a way that sampled elements represent the population. The researcher used a simple random sampling technique. This was to ensure that each of the population investigated had an equal chance of being selected on their merit rather than on some predetermined criteria which may disfavor him or her.

A sample of three state universities/higher institutions was used. The researcher started by selecting the Higher Institutions in Cameroon. She attributed on pieces of paper the names of Higher Institutions in Cameroon, folded them, and put them in a box. The researcher wrote “yes” and “no” on pieces of paper. She folded the papers, put them in a basket, and shuffled. The researcher then called students to pick a paper from the basket, without replacement. After this process, these three higher institutions offering Education for master’s/post graduates students which were, the University of Bamenda (UBa), University of Buea (UB), and the University of Yaounde 1 (UY1) students picked “yes” and were selected. So, each respondent in the population had an equal opportunity of being the sample thanks to the sampling technique. This made it possible to choose a sample that included an equal number of representatives from the designated population as a whole (Kombo & Tromp, 2006). This is significant since it aids in minimizing potential biases. This method was appropriate for the study because it used a representative sample and included participants from the whole target group.

Sampling and Sample size

According to Amin (2005), a sample is a portion of the population whose results can be generalized to that of the entire population. It is from the accessible population that researchers draw their samples. The sample, therefore, is the subset of individuals drawn from the accessible and targeted population. The sample population was available and could give out their experiences just as the situation is. The sample size of this study was 327 students/respondents, determined using the table for selecting a sample, put forth by Krejcie and Morgan (1970).

Table 4: Distribution of Sample Population

N ^o	Name of Institutions	Departments	Sample size	Percentages
1	University of Bamenda (UBa)	CPY	6	1.8%
		CUP	8	2.4%
		EDL	15	4.6%
		PEA	8	2.4%
		TED	4	1.2%
2	University of Buea (UB)	CST	7	1.2%
		EDUTECH	26	8.0%
		EFA	7	2.1%
		EPY	31	6%
		SPE	8	2.4%
3	University of Yaounde 1 (UY1)	CEV	46	14.4%
		EDS	28	8.6%
		EFE	53	16.2%
		DID	25	7.6%
		IOE	13	4.0%
		MED		
	Total		327	100%

Source: Fieldwork July 2022

The instrument used for this study

A questionnaire according to Oxford Advanced Learner's Dictionary (New edition) is a written list of questions that were answered by several people so that information can be collected from the answers. To add to this definition, a questionnaire can be typed or printed in a definite order or form and can be distributed directly or mailed to respondents who are expected to read, understand the questions, then write down the reply in the space meant for the questionnaire itself.

The researcher used a questionnaire in the collection of data. The questionnaire was designed for students, specifically with closed-ended questions of the four Likert scale, ranging from Strongly Agree, Agree, Disagree, and Strongly Disagree. The questions were structured using the four (04) operationalized independent variables and the Dependent variable. There were ten questions in each variable but after the pilot testing of the questionnaire on 10 students and carrying out the reliability test, the researcher found out that the reliability index Cronbach's alpha of some variables was below 0.7. So, she rephrased the questions and removed those that were considered vague or biased. So, the researcher ended up having seven, six, and five questions in each section of the variable. This was done, to make sure that the questions were consistent. This was followed by the presentation of the questionnaire to her supervisor for the supervisor could help her in reviewing questionnaire. The survey items were revised at each step to fit the present context of this study and until the completed questionnaire was developed.

The questionnaire was developed in four steps. In the first step, the original version of the questionnaire was adapted from past studies with similar objectives and constructs as the present study. The second step was the evaluation stage, which involved the review of the questionnaire by the researcher's adviser. The third step was the presentation of the questionnaire to an Educational Technologist with expertise in e-learning and integration of OLPs in the University curriculum and instruction. The survey items were revised at each step to fit the present context of this study and until the completed questionnaire was developed. The final questionnaire was translated into French language. The French version of the questionnaire was shortened, focusing on precise and straightforward questions, to increase the rate of responses by the respondents.

The questionnaire was divided into three sections. The first part consisted of the introduction, which gave the subjects an idea of the purpose of the study and the student's demographic information. The second part consisted of a series of items representing the instructor's online presence (items 1-7). The third part of the questionnaire consisted of a series of 07 Likert scale items representing learning content in the online learning platforms (items 01-07); Interaction in online learning platforms (items 1-5) Perceive use in online learning platforms (items 1-6). The instrument was adapted from the literature features of OLPs (Lonn & Teasley, 2008); Learner-Instructor Interaction was measured using seven items, adapted from Johnson et al. (2000) Arbaugh, Marks, and Sibley, (2005) with a reliability of 0.85. Learner-Content interaction with an alpha coefficient of 0.86 (Taffe et al. 2003); Learner-Learner Interaction with an alpha coefficient of 0.84 (Johnson et al. 2000, Arbaugh et al, 2005).

Although some questionnaires may include more open-ended questions that allow the respondent to answer the question in their way, others provide a provision where all participants are asked the same questions, in the same order, using the same wording, and having the same set of answers to choose from. Most questionnaires are designed to gather already structured data, so they include a set of answers from which the respondent can choose (Matthews & Ross 2010). Based on this justification, the researcher was able to quickly gather data from a variety of schools.

Kothari (2008) asserts that because respondents' responses are provided in their own words, questionnaires typically are not biased as interviews are. Respondents have enough time to compose thoughtful responses. A questionnaire, according to Orodho (2008), is a useful research tool that may be used to elicit personal opinions from respondents. Since the questions, wordings, and order were fixed and similar for every respondent, a questionnaire was preferred for gathering data in this study. Secondly, it was thoughtful to have the benefit of producing uniform responses to the items, enabling comparisons between different data sets. Thirdly, it allowed the participants to express their views on the matter at hand, such as in the case of the Likert scale questions (Matthews & Ross 2010).

Validation of the Instrument

According to Amin (2005), validity means, the extent to which an instrument measures what is it intended to measure and the data collected honestly and accurately represents the respondents' opinion.

To make sure that instrument should produce accurate results and measured what it was intended to measure, after constructing the questionnaire, it was given to coursemates who read through and made some remarks. This was followed by the presentation of the questionnaire to her supervisor who examined each item, making relevant criticism and suggestions to improve their quality.

The researcher also checked the validity of the questions. Items were evaluated based on the variables of the study and their relevant output. After the supervisor had examined the items on the objectives of the study hence, acknowledging the validity of the instrument.

What the construct or scale is measuring is evaluated in terms of construct validity. The anchoring of the conceptions to the theory from which they were derived preserved construct validity.

Reliability of the Instrument

To determine the reliability of the instrument constructed, a pilot test was conducted by the researcher, on ten students from Psychology Master's students in the Faculty of Arts, Letters, and Social Science at the University of Yaounde 1, who were not among the sample population but have the same characteristics as those included in the sample population, with 4 male students and 6 female students making up the group. The essence of this pilot study was to determine students' reactions to the questionnaire. The reliability index of Cronbach's alpha for Instructor's Online Presence in the online learning platforms stood at 0.642. That of learning content in the online learning platforms stood at 0.649% that of Interaction in the online learning, platforms stood at 0.52% that of User Interface Design stood at 0.82. So, the researcher rephrased the questions and removed those that were considered vague or biased to the research work. So, the researcher ended up having seven, six, and five questions in each section of the variable. This was done to make sure that the questions were consistent. After this was done, the researcher again administered the questionnaire to the same students. After analysis, the reliability index for Instructor's Online Presence in online learning platforms stood at 0.649. The Course content in the online learning platforms stood at 0.649% that of Interaction in the online learning platforms stood at 0.594%, and that of User Interface Design stood at 0.82. The results were found to be consistent thus, given its general reliability index of 0.886.

This was consistent with (Shuttle worth, 2009), who recommended giving the test twice before computing the correlation between the two sets of results. Using Pearson's Product Moment, this was accomplished.

Trustworthiness

The degree of consistency that a research instrument produces after numerous trials could be seen as its reliability. Reducing random errors is the main goal of performing a reliability test. The precise dimension of postulated variables presented a test in several study fields. When variables are challenging to evaluate in applied research, the issue of dimension accuracy also arises. Reliability and item analysis can be utilized in the majority of studies to create workable measuring scales, enhance current scales, and evaluate the reliability of scales already in use. In particular, reliability helps with the creation and assessment of sum scales, or scales made up of several distinct measurements.

Research tools were designed following the goals of the study to ensure its reliability. Second, by speaking with the supervisors to confirm that each query contributed to the goals.

One of the most popular types of internal consistency reliability coefficients is Cronbach's Alpha. According to customs, a forgiving cut-off of 0.50 is typical, but in some cases, authors like Gay, (1987), and Cronbach, (1990), specify that 0.6 is desirable in exploratory research; alpha should be at least 0.70 or higher to retain an item in an "adequate" scale; and many researchers demand a cut-off of 0.80 for a "good scale" (Kothari, 2004). Regarding the aforementioned, the researcher in this study employed Cronbach's Alpha to test the reliability threshold of the items during the pilot study, following which she made changes to the questionnaire to make it more effective.

Administration of the Instrument

A cover letter from the University of Yaounde I for the respondents, a research permit from the Ministry of Education, Science, and Technology, as well as approval from the County Director of Education were requested to conduct the study. This was followed by a brief letter of introduction attached to the questionnaire aimed at explaining the purpose of the study and soliciting collaboration from respondents.

Since many respondents/students will not want to be quoted anywhere and the researcher can apply the ethics of research, the researcher included an assurance of confidentiality in handling the instrument. Respondents were asked to be as truthful as they could be with their responses. At any point during the study, they might choose whether to continue or stop participating.

Out of the 327 questionnaires that were distributed to postgraduate (masters) students of the Yaounde 1 (UY1), University of Bamenda (UBa), and University of Buea (UB), 267 were administered face-to-face to the Higher Institutions under study so that, the researcher could have the opportunity to make clarifications or other explanations as the need arises. She used this method because her presence will encourage the respondents to be serious and provide information on time. Also, 60 of the remaining parts were administered online in Google form. This was aimed at breaching the gap between the respondents that the researcher faced difficulties in meeting face to face, for one reason or the other, but making sure that they participate in the activity.

Analysis of Data

Data regarding the effect of online learning platforms on students' performance in higher institutions in Cameroon, were gathered using a questionnaire. The questionnaire results were

analyzed using, the Statistical Package for Social Sciences, and the data were coded and examined (SPSS V 26).

Descriptive statistics were used to analyze the demographic variables, Name of Institution, name of Faculty, Name of Department, Gender, Age range, and Class classification. Factor analysis was used to examine the validity of the research instrument. The factor analysis method was used for removing redundancy or duplication from a set of correlated variables, and reducing many variables to a smaller amount based on the correlations between the variables. After running the factor analysis, some unrelated questions were removed because they were found to be vague and non-informative.

Regression Procedures in SPSS were used, to perform a simple linear regression analysis to determine the relationship between the variables, including the Analysis of Variance (ANOVA).

Quantitative data were produced by the study. Study findings were presented using percentages and tables, and interpretations were made.

The quantitative data collected for this study were analyzed, classified, and arranged according to pertinent trends. The mean score, frequencies, and percentages reported in tables were utilized to analyze quantitative data using generalizations and descriptive statistics. Data analysis using descriptive statistical methods including frequency tables and percentages.

Data Screening

The data was screened for univariate outliers. Out of the returned questionnaire, there were neither outlier no missing values. Hence, the minimum amount of data for factor analysis was satisfied, with a final sample size of 327. However, out of the 30 items used to determine the effect of online learning platforms on students' performance identified in the literature, 327 are used according to the survey results. Hence the analysis of the study will be based on a total of 30 items ten less than the original number of items.

Operationalization of variables

In this section, the variables of the study will be identified together with their modalities. The measurement scale and statistical techniques are indicated.

Variables of the study

In cause-and-effect terms, we can distinguish between dependent and independent variables. This work is concerned with four independent variables and one dependent variable.

Independent Variable

These are variables that, the researcher could manipulate. There are known to be the cause of the dependent variable. The main independent variable in this work is Online Learning Platforms. From it, the working variables for this study were derived which include:

- ✓ Instructor's online presence.
- ✓ Learning content.
- ✓ Interaction/collaboration.
- ✓ Perceive Use

Dependent Variable

These are presumed effects of the independent variable. It is the characteristic that changes as the researcher manipulates actual independent variables. The Dependent Variable of this study is Students' Performance. This student's performance is positive which could be measured after completing a University Programme and could be expressed in terms of excellent, Very Good, Good, Average, Below Average, Poor, and Very Poor.

Table 5: Recapitulation Table of Hypotheses, Variables, indicators modalities, items, and statistical instrument.

Research Hypotheses	Variables	Indicators	Dependent variable	Indicators	Modalities	Statistical Instrument
H1: Instructor's online presence statistically affects students' performance in Higher Institution.	IV: Instructor's online presence	<ul style="list-style-type: none"> - Making class announcements. - Delivery of learning content. - Sharing of instructional materials. - Replying promptly to emails. - Promoting discussion among students. -Constructing collaborative knowledge. 	Students' Performance	<ul style="list-style-type: none"> -Consistency -Age consideration -Results focused -Formulating skills Exploring objectives. 	<ul style="list-style-type: none"> Strongly Agree (SA). Agree Disagree Strongly Disagree 	Descriptive statistics, Regression, Pearson correlation and Analysis of Variance (ANOVA).
H2, Learning content statistically affects students' performance in Higher Institutions in Cameroon.	IV: Learning content	<ul style="list-style-type: none"> -Posting materials such as slides, videos, and blogs. -Designing and delivering materials. - Online discussion forums. - Learners' involvement in lessons. - Material posted is in line with course objectives. 	Students' performance	<ul style="list-style-type: none"> Targeting students' expectations. Age consideration Appropriate resource innovation. 	<ul style="list-style-type: none"> Strongly Agree (SA). Agree Disagree Strongly Disagree 	Descriptive statistics, Regression, Pearson correlation, and Analysis of Variance (ANOVA).

H3: Interaction in online learning platforms statistically affect students' performance in Higher Institutions in Cameroon.	IV: Interaction.	-Learner's engagement in course content. - Posting of messages on online discussion boards. - Solving complex problems - Constructing collaborative knowledge.	Students' performance.	-Student-content. -Student-student. Lecturers-student interaction.	Strongly Agree (SA). Agree Disagree Strongly Disagree.	Descriptive statistics, Regression, Pearson correlation and Analysis of Variance (ANOVA).
H4: Perceived use of online learning platforms statistically affect students' performance in Higher Institutions in Cameroon.	IV: Perceived use of online learning platforms DV: Pupils' behavior	-Comfortable in sitting in the front row. -Regular interaction with lecturers and with other students. -Ability to participate in the course along with other activities.	Students' Performance.	-Active participation. -Interaction. -Time availability.	Strongly Agree (SA). Agree Disagree Strongly Disagree.	Descriptive statistics, Regression, Pearson correlation and Analysis of Variance (ANOVA).

Source: Fieldwork,2022

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION OF RESULTS

This chapter presents the analysis and interpretation of data gathered from the students' questionnaire. The summary of quantitative data has to be presented with the use of tables. The summary of the quantitative data has been presented with the use of tables with frequencies and percentages, mean and standard deviation that incorporates the use of the statistical package for social science (SPSS V26) with the Pearson product-moment correlation test on each hypothesis. A total of 327 questionnaires were distributed to students of the sampled Higher Institutions in Cameroon, which were properly filled and returned questionnaires were 327 (100%). No questionnaire was lost nor excluded in the analysis, since no respondent went away with the questionnaire, and all the filled ones, contained complete information. Therefore, the total response rate was sufficient and safe to analyze and interpret the data.

Background Data of the Respondents

Various scholars provide some insight into the effect of learning management platforms in higher institutions and how they may be affected by personal characteristics such as the name of the institution, name of faculty, name of department, gender, age, class/level, and the learning management platform used in university. The overall results of the respondents' personal background information are presented and interpreted below.

Table 6: Distribution of the students based on their Institutions

Name of Institutions	Frequency	Percentage
University of Bamenda	17	5%
University of Buea	41	12.15%
University of Yaounde	269	82%
Total	327	100%

Source: Field work, 2022

According to the information in Table 4, as concerns item 1 on the name of institution, out of 327 students, 17 (5%) were from the University of Bamenda (UBa), 41 (12.15%) were from the University of Buea (UB), and 269 (82%) from the University of Yaounde 1 (UY1). This shows that the majority of the respondent/students were taken from the University of Yaounde 1.

Table 7: Frequency distribution of students based on their Faculty

Name of Faculty	Frequency	Percentage
Faculty of Education	327	100.0

Source: Fieldwork, 2022

The table above shows that only the Faculty of Education of the Master/Postgraduate students was used in these Higher Institutions.

Table 8: Frequency distribution based of students based on Departments

Departments	Frequency	Percentage
CEV	46	14.1%
EDS	28	8.6%
EFE	53	16.2%
DID	25	7.6%
IOE	13	4.0%
MED	42	12.8%
CPY	6	1.8%
CUP	8	2.4%
EDL	15	4.6%
EPY	31	9.5%
PEA	8	2.4%
TED	4	1.2%
CST	7	2.1%
EDUTECH	26	8.0%
EFA	7	2.1%
SPE	8	2.4%
Total	46	14.1%

Source: Fieldwork, 2022

Table 5, shows the name of departments in UBa, UB, and UY1, being 18 in number, which was, CEV 46(14.1%), EDS 28 (8.65%), EFE 53 (16.2%), DID 25 (7.6%), IOE 13 (4.0%), MED 42 (12.8%), CPY 6 (1.8%), CUP 8 (2.4%), EDL 15 (4.6%), EPY 31 (9.5%), PEA 8 (2.4), TED 4

(1.2%), CST 7 (2.1%), EDUTECH 26 (8.0%), EFA 7 (2.1%), and SPE 8 (2.4%). From the results obtained here, the highest departments were EFE, CEV, and MED, which are all from UY1. This is a result of the fact that UY1 Research Master's programs for only fifty thousand Francs (50.000 FCA) are to be paid by students. While CPY, CUP, EDL, PEA, TED of UBa and EPY, EFA, CST, and SPE of UB have fewer students in their departments because they offer academically paid post-graduate programs whose fees between 480-650.000Fcfa, which makes it difficult for average Cameroonian student to afford. Thus, reducing their enrolment rate at the postgraduate level.

Table 9: Distribution of students based on their Ages

Ages of students	Frequency	Percentages
20-25	92	28.1%
26-30	175	53.6%
30	60	18.3%
Total	327	100%

Source: Fieldwork, 2022

As far as respondent's age is concerned, item 5 indicates that out of 327 respondents/students (28.1%) had their ages ranging from 20-25, 92 (28.1%), respondents/students had their ages ranging from 26-30, 175 (53%), and respondents/students had their ages ranging from 30+, 60(18.3).

Table 10: Distribution of students based on year

Year of students	Frequency	Percentage
Year one	171	52.3%
Year two	156	47.7%
Total	327	100%

Source: Fieldwork, 2022

The items above indicate that out of 327 respondents/students, 171 (52.3%) were first-year master's students while 156 (47.7%) respondents/students were year two master's students. This shows that a majority of the postgraduate (Master's) students are in their first year of their Master's Degree. So, lecturers need to engage in coaching them.

Table 11: Frequency distribution based on platforms used

Platform Used	Frequency	Percentages
Google Classroom	193	59.0%
Zoom	81	24.8%
Moodle	29	8.9%
Google meet	24	7.3%
Total	327	100%

Source: Fieldwork, 2022

Table 9 indicates that, out of 327 respondents/students, 193 (59.0%) respondents/students use Google Classroom, 81(24.8%) respondents/students use Zoom, 29 (8.9%) respondents/students use Moodle, 24 (7.3%) respondents/students use Google meet.

Table12: Distribution of students based on Gender

Gender	Frequency	Percentage
Male	156	47.7%
Female	170	52.0%
Total	327	100%

Source: Fieldwork, 2022.

Items on gender were grouped into two; this included male and female. It reveals that 156(47.7%) Respondents/students were males and 170(52.0%) respondents/students were females. The variation is because there are more females than males in the sample of Higher Institutions. This shows that the majority of Higher Education students are females.

Descriptive Analysis of Variables

After the demographic information of respondents/students, the researcher presents the descriptive analysis of the opinions of the respondents. This was done by dealing first with the independent variables and testing of hypothesis, followed by dependent variables.

Independent Variable

The main independent variable here was Online Learning Platforms. In this sub-section, the researcher was attracted to establishing the opinions of the respondents on the Instructor's Online Presence, Learning Content, Interaction, and User interface design on students' Performance. The

students' responses were characterized by Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The respondents' opinions were given and the results are indicated in the tables below.

Table 13: Distribution of respondents' opinions on Instructor's Online Presence in Online Learning Platforms.

No	Items	SA		A		D		SD		M	Std
		f	%	f	%	f	%	F	%		
1	Course content/materials are not frequently uploaded on Google classroom/Google meet /Zoom /Moodle.	142	43.4	160	48.9	19	5.8	6	1.8	3.34	0.672
2	Instructors do not create room for students' frequent postings to discussion boards.	176	53.8	132	40.4	17	5.2	2	0.6	3.47	0.625
3	I don't usually receive instant updates when using Google classroom /Google meet /Zoom / Moodle.	160	48.9	151	46.2	14	4.3	2	0.6	3.43	0.608
4	Instructors don't usually engage in dialogue/ discussions with students and provide feedback on Google classroom /Google meet/ Zoom /Moodle.	167	51.1	147	45.0	147	45.0	0	0	3.47	0.574
5	Instructors don't usually send assignments through Google Classroom /Google/ meet/ Zoom /Moodle.	131	40.1	182	55.7	11	3.4	3	0.9	3.35	0.592
6	I feel that the materials uploaded by lecturers are not easy to understand.	156	47.7	157	48.0	10	3.1	4	1.2	3.42	0.616
7	I feel that our lecturer's communication style with students on the online learning platform is not cordial.	126	38.5	178	54.4	21	6.4	2	0.6	3.31	0.616
Grand Mean						3.3997					
SD						0.32687					

Source: Fieldwork, 2022

According to information in table 11 above, item 1 indicates that, out of 327 respondents/students, 142(43.4%) of the respondents' opinions were Strongly Agree, 160 (48.9%) of the respondents/students Agree, 19 (5.8%) of the respondents/students opinions were Disagree while 6 (1.8%) of the respondents/students opinions were Strongly Disagree, which indicates that with the Instructor's Online Presence, lecturers don't deliver learning content promptly to students, engage in frequent postings to discussion boards, reply promptly to email and assignments, their communication styles are not cordial with their students, as they engage in dialogue with students on online learning platforms.

Item 2 explored the opinions of the respondents on whether when learning using learning via online learning platforms, the instructors create room for students' frequent postings to discussion boards or not. Information in the table above indicated that 176 (53.8%) respondents' opinions Strongly Agree, 132(40.4%) respondent's opinions Agree, 17 (5.2%) of the respondents' opinions were Disagree, and 2 (.6%) of the respondents' opinions Strongly Disagree. This showed that most instructors/lecturers in higher institutions in Cameroon don't often create room for students' frequent postings to discussion boards when teaching using online learning platforms.

Item 3 explored the respondents' opinions on whether respondents/students receive instant updates when using learning online learning platforms or not (Google classroom, Zoom, Google meet). The results reveal that 160 (48.9%) respondent's opinions were Strongly Agree, 151 (46.2%) respondents' opinions Agree, 14 (4.3%) respondents' opinions Disagree and 2(.6%) Strongly Disagree. This clearly shows that the majority of the students don't usually receive instant updates from their instructors when using online learning platforms (Google classroom, Zoom, Google meet).

Item 4, seeks to find out whether instructors usually engage in dialogue/discussions with students and provide feedback on learning management platforms (Google classroom, Zoom, Google meet). The information in the table above indicates that out of 327 respondents/students, 167(51.1%) respondents Strongly Agree, 167(51.1%) opinions were Disagree 147 (45.0%) responses while no respondents Strongly Disagree. This shows that the majority of instructors don't usually engage in dialogue/discussions with students and provide feedback on learning management platforms (Google classroom, Zoom, Google meet).

Item 5 established whether Instructors send assignments through Google Classroom /Google meet/Zoom/Moodle or not. The result in the table above indicated that 131 (40.1%) of the respondents Strongly Agree, 182(55.7%) of the respondents were Agree, 11(3.4%) opinions were

Disagree and 3 (.9%) were Strongly Disagree. This shows that a slight majority of the instructors do not usually send assignments through Google Classroom /Google meet/Zoom/Moodle.

Item 6 established whether the respondents feel that the materials uploaded by lecturers are easy to understand or not. The results revealed that out of 327 respondents/students, 156 (47.7%) respondents were Strongly Agree, 157(48.0%) respondents were Agree, 10 (3.1%) were Disagree, and 4(1.2%) responses were Strongly Disagree. This means that the materials uploaded by lecturers are not easy to understand and meet up the needs of individual learners in class.

Item 7 seeks to find out whether students feel that their lecturer's communication style with students on the learning platform is cordial or not. The results revealed that out of 327 respondents/students, 126 (38.5%) were Strongly Agree, 178 (54.4%) were Agree, 21(6.4%) were Disagree, 2 (.6%) were Strongly Disagree. This means that lecturer's communication style with students on the learning platform is not cordial.

Table 14: Respondents' view on learning content in learning in online learning platforms

No	Items	SA		A		D		SD		m	Std
		f	%	f	%	f	%	f	%		
1	Most postings on online learning platforms are not in line with the course objectives.	184	56.3	125	38.2	17	5.2	1	0.3	3.50	0.611
2	The learning activities on Google Classroom /Google meet/Zoom/Moodle are not user friendly	123	37.6	176	53.8	20	6.1	8	2.4	3.27	0.683
3	I feel that learning activities on Google Classroom /Google Meet/Zoom/Moodle do not meet the needs of all individual learners.	127	38.8	172	52.6	21	6.4	7	2.1	3.28	0.679
4	The learning methods used in Google Classroom /Google Meet/Zoom/Moodle does not meet the needs of all individual students.	126	38.5	173	52.9	27	8.3	1	0.3	3.30	0.627
5	Instructions relating to learning activities on Google Classroom /Google meet/Zoom/Moodle are not easy to understand.	184	56.3	120	36.7	22	6.7	1	.3	3.49	0.636
6	The material/content given on online learning platforms, cannot be easily downloaded and kept for further use.	134	41.0	159	48.6	33	10.1	1	.3	3.30	0.658
7	All up loadings on Google Classroom /Google meet/Zoom/Moodle are not accompanied by references for clarity.	184	56.3	124	37.9	18	5.5	1	.3	3.30	0.658
Grand Mean						3.3775					
SD						0.35694					

Source: Fieldwork July 2022

According to the table above, item 1 shows that 184 (56.3%) of the respondents Strongly Agree with all postings on the online learning platforms not being in line with the course objectives, 125(38.2%) respondents/students Agree, while 17(5.2%) respondents/student were Disagree and 1 (.3%) of the respondents/students were Strongly Disagree. This means that the majority of the instructors post content on online learning platforms that are not in line with the course objectives.

Item 2, examined the respondents' opinions on whether the learning activities on Google Classroom /Google meet/Zoom/Moodle are not user-friendly. Out of 327 respondents/students, 123(37.6%) Strongly Agree, 176(53.8%) Agree, 20(6.1%) Disagree and 8 (2.4%) Strongly Disagree. This showed that a good number of instructors do not always start their learning activities on Google Classroom /Google meet/Zoom/Moodle which are not user-friendly and often not from simple to complex.

Item 3, investigated the respondents' opinion on whether they feel that learning activities on Google Classroom /Google meet/Zoom/Moodle meet the needs of all individual learners or not. Out of 327 respondents/student, 127(38.8%) were Strongly Agree, 172(52.6%) were Agree, 21(6.4) were Disagree, and 7(2.1%) were Strongly Disagree. This shows that the majority of the instructors' learning activities on Google Classroom /Google meet/Zoom/Moodle do not meet the needs of all individual learners. Thus, making their learning less interactive.

Item 4, investigated the respondents' opinions on whether the learning methods used in Google Classroom /Google meet/Zoom/Moodle meet the needs of all individual students or not. From the responses, 126(38.5%) teachers were Strongly Agree, 173(52.9%) respondents/students were Agree, 27(6.7%) were Disagree, and 1(.3%) respondents/students were Strongly Disagree. Thus, making it too less learner-centered.

Item 5, examined the respondents' opinions on whether instructions relating to learning activities on Google Classroom /Google meet/Zoom/Moodle are easy to understand or not. From the responses, 184 (56.3%) respondents/students Strongly Agree, 120(36.7%) respondents/students Agree, 22 (6.7%) Disagree, and 1(.3%) Strongly Disagree. This show that the majority of the instructors'/lecturers' instructions relating to learning activities on Google Classroom/Google meet/Zoom/Moodle are difficult to understand.

Item 6 investigated the respondents' opinions on whether the material/content given can be easily downloaded and kept for further use or not. Out of 327 respondents/students, 134(41.0%) were Strongly Agree, 159(48.6%) were Agree, 33 (10.1%) and 1(.3%) were Strongly Disagree.

Item 7 examined the respondents' opinion on whether all up loadings on Google Classroom /Google meet/Zoom/Moodle are accompanied by references for clarity or not. Out of 327 respondents/students, 184 (56.3%) Strongly Agree, 124 (37.9%), respondents/students Agree, 18 (5.5%) Disagree, and 1 (.3%) Strongly Disagree.

Table 15: Respondents' view on interaction in online learning platforms

No	Items	SA		A		D		SD		M	std
		f	%	f	%	f	%	f	%		
1	I actively engage in learning content by frequently posting messages on online learning Platforms.	121	37.0	185	56.6	18	5.5	3	0.9	3.30	0.612
2	I find it easy to interact with my lecturers and course mates when using online learning platforms.	179	54.7	117	35.8	29	8.9	2	0.6	3.45	0.680
3	All functions on this software (Google classroom) are designed appealingly.	96	29.4	194	59.3	32	9.8	5	1.5	3.17	0.653
4	I participate in class by solving complex problems when using online learning platforms.	165	50.5	132	40.4	28	8.6	2	0.6	3.41	0.671
5	Google Classroom/Google meet/Zoom/Moodle is designed in a user-friendly structure.	16	4.9	13	4.0	139	42.5	159	48.6	3.29	0.761
Grand mean						3.3205					
SD						0.45541					

Source: Fieldwork, 2022

As it can be viewed from item 1 above, on whether respondents/students actively engage in learning content by frequently posting messages on Learning Management Platforms, 121 (37,0%) out of 327 respondents/students Strongly Agree, 185 (56.6) respondents/students were Agree, 18 (5.5%) respondents were Disagree while 3 (.9%) respondents were Strongly Disagree.

Item 2 indicates that 179 (54.7%) of the respondent's opinions Strongly Agree, 117(35.8%) respondents' opinions were Agree, 29 (8.8%) opinions were Disagree, and 2(.6%) Strongly Disagree, with the view that they involve students during teaching and learning when using the learning management platforms.

Item 3 establishes respondents' opinions on whether they find it easy to interact with my lecturers and course mates when using learning management platforms. Results from the item reveal that 96(29.4%) of the respondents Strongly Agree, 194(59.3%) of the respondents were Agree, 32 (9.8%) respondents were Disagree, and 5(1.5%) Strongly Disagree. This shows that many students find it easy to interact with my lecturers and course mates when using learning management platforms.

Item 4 establishes the respondents' opinions on whether respondents participate in class by solving complex problems when using learning management platforms. Results from the table above reveal that 165(50.5%) of the respondents Strongly Agree with their opinions, 132(40.4%) of the respondents were Agree, 28 (8.6%) Disagree and 2(.6%) Strongly Disagree. This shows that most students actively participate in lessons on the learning Management Platforms.

Item 5 was to find out the respondents' opinions on whether the Google Classroom/Google meet/Zoom/Moodle platform is designed in a user-friendly structure. Results in the table above indicate that 16 (4.9%) respondents gave their opinions showing Strongly Agree, 13 (4.0%) respondents gave their opinions showing Agree, 159 (48.6%) responses were Disagree, and 139 (42.5%) were Strongly Disagree. This shows a great number of lecturers often design Learning Management Platforms which is not learners' friendly thus making it difficult for students to actively participate in the lessons.

Table 16: Respondents' view on perceived use of online learning platforms.

No	Items	SA		A		D		SD		M	std
		f	%	f	%	f	%	f	%		
1	I use online learning platforms to obtain my lectures.	141	43.1	143	43.7	29	8.9	14	4.3	3.26	0.792
2	I use online learning platforms to get useful information when I need it.	145	44.3	148	45.3	16	4.9	17	5.2	3.30	0.791
3	I submit my assignments with the use of Google Classroom/Google meet/ Zoom.	173	52.9	125	38.2	28	8.6	1	0.3	3.44	0.661
4	The online learning platforms help me to learn at my convenience.	151	46.2	165	50.5	9	2.8	2	0.6	3.42	.580
5	I receive feedback and corrections from my lecturers through online learning platforms.	137	41.9	151	46.2	38	11.6	1	0.3	3.30	0.679
6	I use online learning platforms to contact course mates.	146	44.6	155	47.4	25	7.6	1	0.3	3.36	0.636
7	I send and receive instant updates when using online learning platforms.	1	.3	22	6.7	13 9	42.5	16 5	50.5	3.43	0.632
Grand Mean						3.3578					
SD						0.41004					

Source: Fieldwork, 2022

Item 1, was to check respondents' opinions on whether the online learning platforms help students to obtain knowledge and allow learners to think of solutions first before showing them how it is done. The table above reveals that 141 (43.1%) respondents Strongly Agree, 147(43.7%) responses were Agree, 29 (8.9%) respondents Disagree and 14 (4.3%) responded Strongly Disagree. This shows that the majority of the teachers often teach content that is within the reach of their learners.

Item 2 investigated respondents' opinions on whether online learning platforms help them to get useful information when they need it. Results from the table above indicate that 145(44.3%) respondents Strongly Agree, 148(45.3%) respondents Agree, 16 (4.9%) Disagree, and 17(5.2%) respondents Strongly Disagree.

Item 3 investigated respondents' opinions on whether Google classroom/Google meet/Zoom, help them to submit assignments. Information in the table above shows that 173(52.9%) respondents Strongly Agree, 125 (38.2%) Agree, 28 (8.6%) respondents Disagree, and 1 (.3%) respondent Strongly Disagree. This shows that most students can effectively manipulate online learning Platforms.

Item 4 investigated respondents' opinions on whether online learning platforms help them to learn at their convenience. The table above reveals that 151 (46.2%) students Strongly Agree, 165 (50.5%) Agree, 9 (2.8%) Disagree, and 2 (.6%) Strongly Disagree. This means that teaching through online learning Platforms is learner-centered.

Item 5 investigated the respondents' opinions on whether the online learning platforms help them get feedback from their lecturers. Results in the table above indicate that 137 (41.9%) respondents Strongly Agree, 151 (46.2%) respondents Agree, 38 (11.6%) Disagree and 1 (.3%) responded Strongly Disagree. This shows that most learners learn more when they are active.

Item 6 investigated the respondents' opinions on whether the online learning platforms help them to contact course mates. From the table above, 146(44.6%) of the respondents' opinions Strongly Agree, 155 (47.4%) responses were Agree, 25 (7.6%) Disagree, and 1 (.3%) response was Strongly Disagree.

Item 7 investigated respondents' opinions on whether they receive instant updates when using Learning Management platforms. Results from the table above indicate that 1 (.3%) respondent Strongly Agree, 22 (6.7%) respondents were Agree, 139 (42.5%) disagreed, and 165 (50.5%) respondents Strongly Disagree. This means that most lecturers hardly post information on discussion boards when using online learning Platforms.

Correlation analysis

To test the previously formulated hypotheses with the help of simple linear regression analyses, Saunders et al. (2016) opine that, the collected data has to meet the precondition that is concerned with the linearity of the relationship between the separate IVs and the DV. Therefore, in the first situation, the researcher produced scatterplots of the relationships between the different IVs, namely the Instructor's Online Presence in Online Learning Platforms, Learning Content, Interaction, and Perceived Use, towards Students' Performance as DV. Looking at the scatterplots (see Table 18 below), it can be seen that the relationship between the different IVs and the DV in all cases is linear.

Table 17: Correlations among variables

	Instructor's Online Presence	Learning Content	Interaction	Perceived Use	Students' Performance
Instructor's Online Presence					
Learning Content	0.483				
Interaction	0.361	0.230			
Perceived Use	0.498	0.343	0.562		
Students' Performance	0.252	0.263	0.339	0.349	
Mean	3.3997	3.3775	3.3205	3.3578	3.3777
Standard Deviation	3.3997	0.35694	0.45541	0.41004	0.20052
N	327	327	327	327	327

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Fieldwork, 2022

Summarily and to fully test the assumption of the linearity and strengths of relationships between the separate IVs and the DV, the researcher has conducted a correlation analysis whose main results are displayed in Table 18 above. Outcomes show that the instructor's Online Presence, Learning Content in online learning platforms, Interaction, and Perceived Use are significantly correlated to Students' Performance.

Concerning the strength of relationship, the IVs of Instructor's Online Presence and Learning Content (Pearson's $r(327) = 0.483$, $p < .01$), Instructor's Online Presence and Interaction (Pearson's $r(327) = 0.461$, $p < .01$), Instructor's Online Presence and Perceive Use (Pearson's $r(327) = 0.498$, $p < .01$), Learning Content and Interaction (Pearson's $r(327) = 0.230$, $p < .01$), Learning Content and Perceive Use (Pearson's $r(327) = 0.343$, $p < .01$), Interaction and Perceive Use (Pearson's $r(327) = 0.562$, $p < .01$).

Hence, from the correlation analysis, it can be concluded that all four measured IVs are significantly correlated. Moreover, due to the confirmed linearity of relationships between the separate IVs and the DV the precondition to run regression analyses to actually test the previously developed hypotheses is met (Saunders et al., 2016).

Regression Analysis

Since Online learning platforms influence students' performance, students' performance was the Dependent Variable, Instructors Online Presence (IOP), Learning Content (LC), Interaction (INT), and Perceive Use (PU) were the constructs of the Independent Variable (IV).

The various assumptions underlying simple linear regression were examined. The correlations between the independent variables and the dependent variable (except Learning Content and Interaction) were above 0.3 thus, were acceptable for the regression analysis (Tabachnick & Fidell, 2007). Also, there were not very high correlations ($r > 0.9$) (Field, 2009) between the independent variables. For further evaluation to check multicollinearity, which indicates a perfect linear relationship between two or more of the independent variables, the tolerance and variance inflation factor (VIF) values were examined. All the tolerance values were above 0.1 and the VIF values were less than 10, thus the data set did not indicate multicollinearity (Field, 2009; Tabachnick & Fidell, 2007).

The Mahalanobis distance was used to check for outliers. Mahalanobis distance "is the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables" (Tabachnick & Fidell, 200, p.74). It reveals cases that lie at a distance from the other cases and such cases are considered outliers. Mahalanobis distance is evaluated using chi-square distribution. "Mahalanobis distance is distributed as a chi-square (X^2) variable, with degrees of freedom equal to the number of independent variables" (Tabachnick & Fidell, 2007, p. 166). To detect which cases are multivariate outliers, the critical X^2 value of the number of degrees of freedom of the independent variables is compared with the Mahalanobis distance of the cases (Tabachnick & Fidell, 2007). Any case whose Mahalanobis distance value is greater than the critical X^2 is considered an outlier. Tabachnick and Fidell (2007)

have produced a table of critical X^2 values which researchers can compare their Mahalanobis distance values with. The data cases of the study were compared with this critical X^2 value. No cases with critical values higher than what was prescribed by Tabachnick and Fidell (2007) were detected.

The normality of the data set was checked with the Normal Probability Plot and the Scatterplot of the Standardized Residuals. The Normality Probability Plot produced a fairly straight diagonal plot which indicated that the points did not deviate from normality. Again, the scatterplot produced a rectangular-shaped distribution of the residuals with most points concentrated around zero (0). This indicated that the data was fairly normally distributed. SPSS produces unusual cases in a table called Case Wise Diagnostics for standard multiple regression. Pallant (2005) alerted that the Case Wise Diagnostics table has information on cases that have values above 3.0 or below -3.0 as their standardized residuals and that in a normally distributed data, such cases should not be more than 1% of the total cases. In order to check if such cases are having effect on the results, one should have a look at the Cook's distance value. If the Cook's distance is more than 1, then there is cause for concern (Field, 2009; Pallant, 2005; Tabachnick&Fidell, 2007). Though the Casewise Diagnostics produced a case with standardized residual above 3 (in this case it was 2.371), the Cook's distance produced a maximum value of 0.129. Thus, though the standardized residual is above 3, the maximum Cook's distance value was less than 1 and therefore this case can be included in the regression.

The standard regression with each of the four independent predictors (IOP, LC, INT and PU) to predict students' performance, were used to verify each of the research hypotheses. The adjusted R^2 was reported because Tabachnick and Fidell (2007) recommended that the R square tends to overestimate its true value in the population when sample size is small and that the adjusted R square corrects the value of R square and thus produces a better predictor of the true population value.

Test of Hypotheses

H₀1: Instructor's Online Presence in Online Learning Platforms has no statistically significant influence on Students' Performance in Higher Institutions of learning in Cameroon at p=.05.

Regression was carried out to ascertain the extent to which Instructor's Online Presence in Online Learning Platforms scores predict Students' performance scores.

Table 18: Model Summary of the Instructor's Online Presence as a predictor of Students' performance.

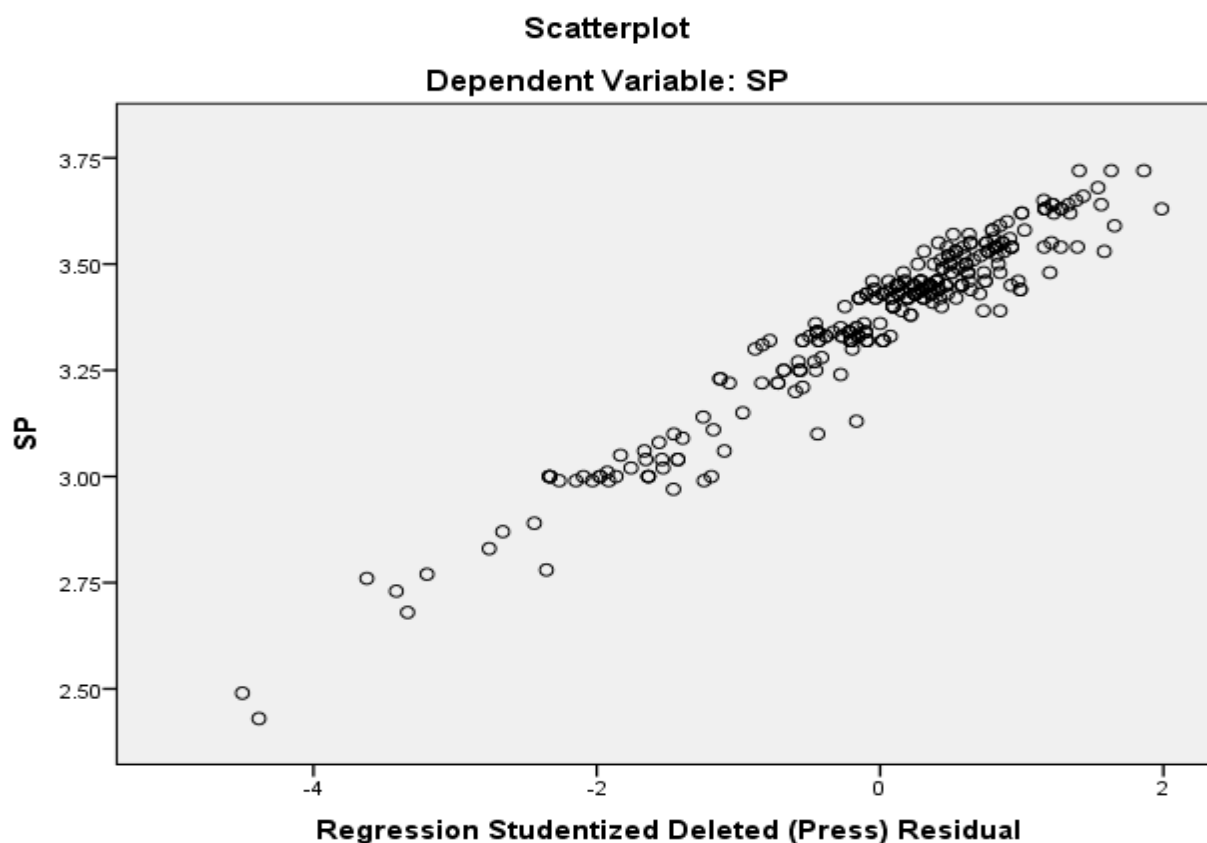
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.252 ^a	0.063	0.060	0.19437

a. Predictors: (Constant), IO

b. Dependent Variable: SP

The scatterplot showed that, there was a strong positive linear relationship between instructors' online presence on online line learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.252$. The regression model predicted 6% of the variance. The model was a good fit for the data ($F(1, 325) = 21.972, p < 0.05$).

Figure 3: Scatterplot of the Instructor's Online Presence as a predictor of Students' performance



The next table is the F test. The linear regression F test has the null hypothesis that there is no statistically significant effect of instructors' online presence and students' Performance. In order words $R^2 = 0.06$ with $F(1, 325) = 21.972, p = .000$, the test is highly significant, thus we can assume that there is a statistically significant effect of instructor's online presence and students' performance in our model.

Table 19: ANOVA of the instructor's online presence as a predictor of students' performance

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	0.830	1	0.830	21.972	0.000 ^b
Residual	12.278	325	0.038		
Total	13.108	326			

a. Dependent Variable: SP

b. Predictors: (Constant), IO

The ANOVA results show that the linear regression F test has the null hypothesis that there is no statistically significant effect of instructor's online presence on students' performance, in order words $R^2 = 0.06$, with $F(1, 325) = 21.972$, $p = .000$, the test is highly significant, thus we can assume that there is a statistically significant effect of instructor's online presence in online learning platforms on students' performance in our model.

Table 20: Coefficients of the instructor's online presence as a predictor of students' performance.

Model		Unstandardized Coefficients		Standardize	t	Sig.
		B	Std. Error	d Coefficients Beta		
1	(Constant)	2.853	0.112		25.363	0.000
	IO	0.154	0.033	.252	4.687	0.000

a. Dependent Variable: SP

The regression equation showed a significant relationship between instructors' online presence in online learning platforms and students' performance scores ($t = 4.687$, $p < 0.05$). The slope coefficient for an instructor's online presence in online learning platforms was 0.252 so, students' performance increases by a factor of 0.252.

H₀2: Learning Content in online learning platforms, has no significant influence on students' performance in Higher Institutions in Cameroon.

Here, regression was also carried out to ascertain the extent to which learning content scores predict students' performance scores.

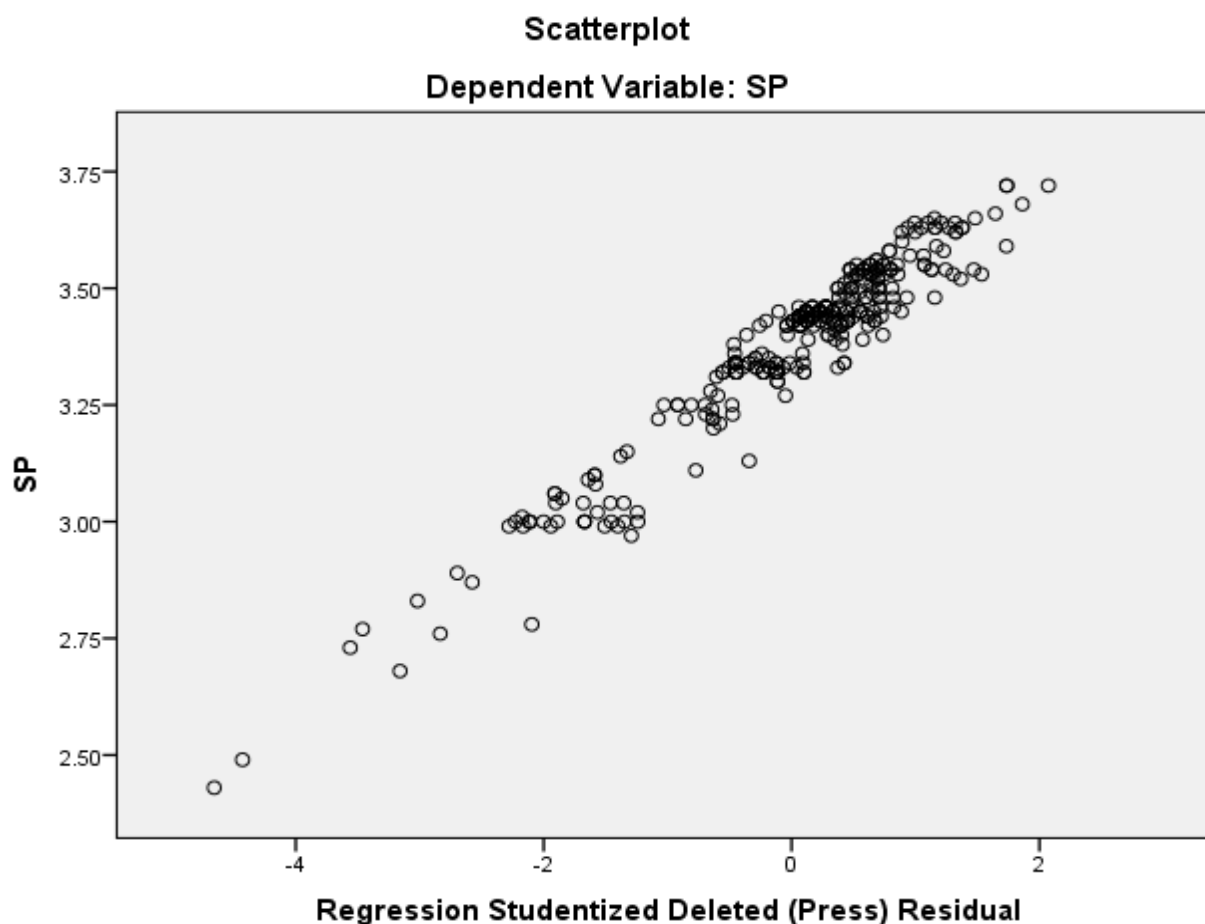
Table 21: Model Summary of Learning Content as a predictor of Students' performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.263 ^a	.069	.067	.19374

a. Predictors: (Constant), LC

b. Dependent Variable: SP

The scatterplot showed that there was a strong positive linear relationship between learning content in online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.263$. The regression model predicted 6.9% of the variance. The model was a good fit for the data ($F(1, 325) = 24.230, p < 0$).

Figure 4: Scatterplot of the Learning Content as a predictor of Students' performance.

The next table is the F test. The linear regression F test has the null hypothesis that there is no statistically significant effect of Learning Content in online learning platforms and students' Performance. In order words $R^2 = 0.069$, with $F(1, 325) = 24.230, p = .000$, the test is highly significant, thus we can assume that there is a statistically significant effect of Learning Content and students' performance in our model.

Table 22: Anova^a of learning content as a predictor of students' performance

	Model	Sum of Squares	Df	Mean Square	F	Sig.
	Regression	0.909	1	0.909	24.230	0.000 ^b
1	Residual	12.199	325	0.038		
	Total	13.108	326			

a. Dependent Variable: SP

b. Predictors: (Constant), LC

ANOVA results show that the linear regression F test has the null hypothesis that there is no statistically significant effect of Learning Content on students' performance in Higher Institutions in Cameroon at $p=.05$. In other words $R^2= 0.069$, with $F (1, 326) = 24.230$, $p= .000$, the test is highly significant. Thus, we can assume that there is a statistically significant effect of an instructor's online presence in online learning platforms on students' performance in our model.

Table 23: Coefficients of learning content as a predictor of students' performance

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
1 (Constant)	2.878	0.102			28.188	0.000
LC	0.148	0.030	0.263		4.922	0.000

a. Dependent Variable: SP

The regression equation showed a significant relationship between Learning Content and Students' performance scores ($t = 4.922$, $p < 0.05$). The slope coefficient for Learning Content in Online Learning Platforms was .148. So, students' performance increases by a factor of 0.263.

H₀₃: Interaction in OLPs has no significant influence on students' performance in Higher Institutions in Cameroon at $p=.05$.

A simple linear regression was also carried out to ascertain the extent to which interaction scores predict students' performance scores.

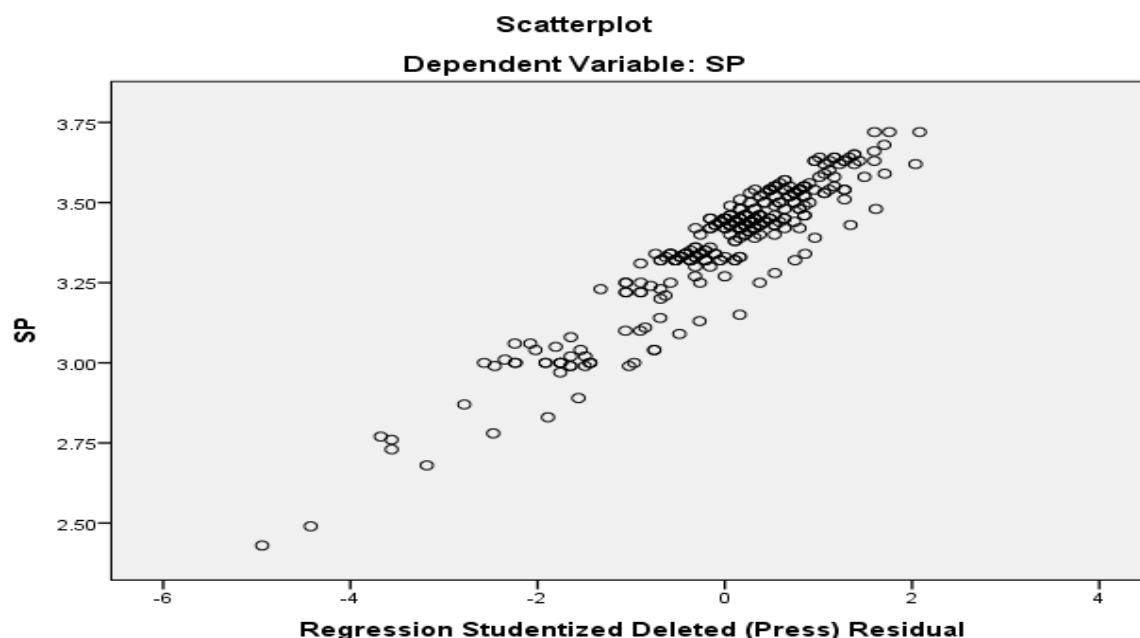
Table 24: Model summary of interaction as a predictor of students' performance.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.339 ^a	0.115	0.112	0.18892

a. Predictors: (Constant), IN

b. Dependent Variable: SP

The scatterplot showed that there was a strong positive linear relationship between Interaction in online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.339$. The regression model predicted 11.5 % of the variance. The model was a good fit for the data ($F(1, 325) = 42.277, p < 0.05$).

Figure 5: Scatterplot of Interaction as a predictor of Students' performance.

The next table is the F test. The linear regression F test has the null hypothesis that there is no statistically significant effect of Interaction in online learning platforms and students' Performance. In other words $R^2 = 0.115$, with $F(1, 325) = 42.277, p < 0.05$. The test is highly significant, thus, we can assume that there is a statistically significant effect of interaction and students' performance in our model.

Table 25: Anova^a of interaction as a predictor of students' performance

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	1.509	1	1.509	42.277	0.000 ^b
Residual	11.599	325	0.036		
Total	13.108	326			

a. Dependent Variable: SP

b. Predictors: (Constant), IN

The regression results showed a significant relationship between Interaction in Online Learning Platforms and Students' Performance scores ($t = 6.502$, $p < 0.05$). The slope coefficient for Interaction in Online Learning Platforms was 149. So, Students' Performance increases by a factor of .149.

Table 26: Coefficients of interaction as a predictor of students' performance

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.882	0.077		37.424	0.000
IN	0.149	0.023	0.339	6.502	0.000

a. Dependent Variable: SP

H₀4: Perceive Use of OLPs has no significant influence on students' performance in Higher Institutions Cameroon at $p=.05$.

A simple linear regression was also carried out to ascertain the extent to which Interaction scores predict students' performance scores.

Table 27: Model summary^b of perceived use as a predictor of students' performance

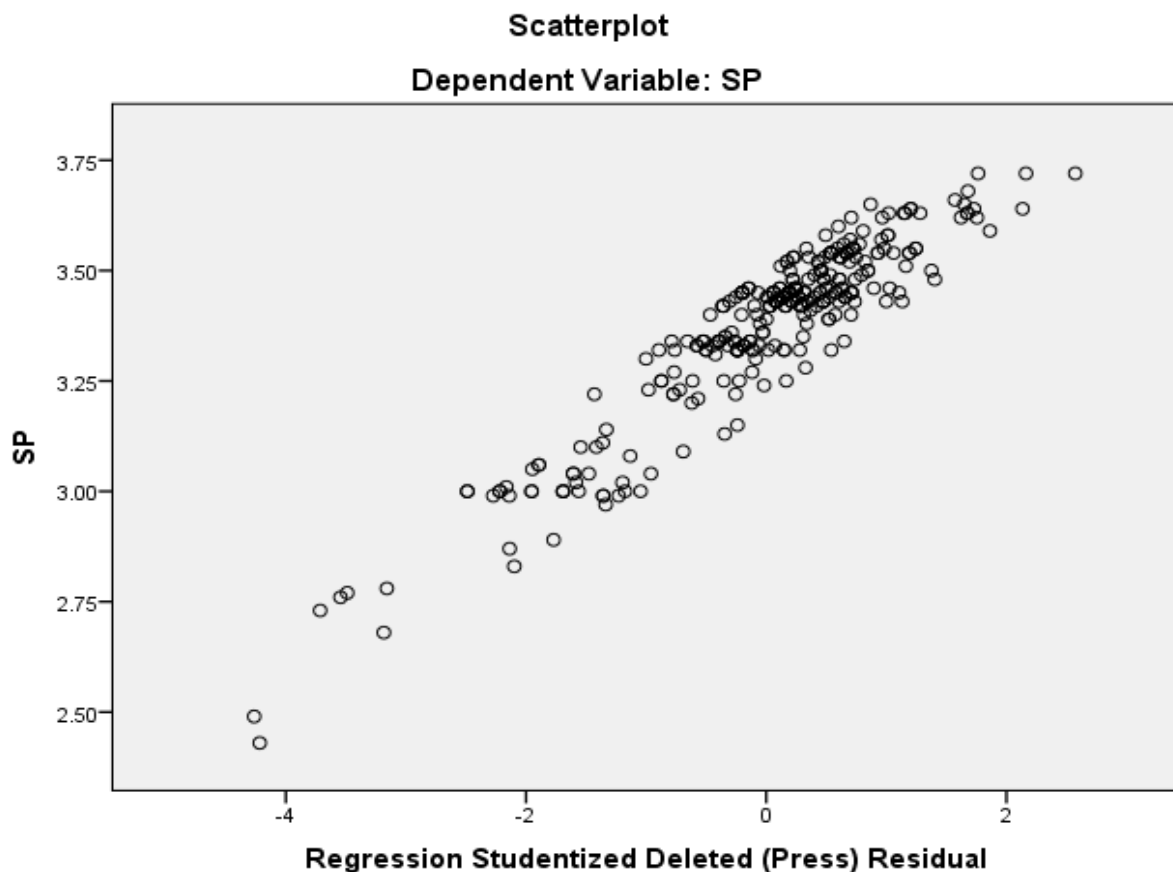
Model	R	R Square	Adjusted R Square	St d. Error of the Estimate
1	0.349 ^a	0.122	0.119	0.18818

a. Predictors: (Constant), PU

b. Dependent Variable: SP

The scatterplot showed that there was a strong positive linear relationship between Perceive Use in online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.349$. The regression model predicted 25.2 % of the variance. The model was a good fit for the data $F(1, 325) = 45.163, p < .001$.

Figure 6: Scatterplot of Perceive Use as a predictor of Students' performance.



Perceives Use has no significant influence on students' Performance in Higher Institutions in Cameroon. In order words $R^2 = 0$, with $F(1, 325) = 45.163, p < .001$. The test is highly significant. Thus, we can assume that Perceive Use of Online Learning Platforms is statistically significant on students' performance in our model.

Table 28: Anova^a of perceive use as a predictor of students' performance

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	1.599	1	1.599	45.163	0.000 ^b
	Residual	11.509	325	0.035		
	Total	13.108	326			

a. Dependent Variable: SP

c. Predictors: (Constant), PU

ANOVA results show that the linear regression F test has the null hypothesis that there is no statistically significant effect of Perceive Use of Online Learning Platforms on students' performance in Higher Institutions in Cameroon at $p=.05$. In order words $R^2= 0.122$, with $F(1, 325) = 45.163$, $p= .000$. The test is highly significant. Thus, we can assume that there is a statistically significant influence of Perceive Use of Online Learning Platforms on students' performance in our model.

Table 29: Coefficients of Perceive Use as a predictor of Students' Performance

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
1	(Constant)	2.804	0.086		32.614	0.000
	PU	0.171	0.025	0.349	6.720	0.000

a. Dependent Variable: SP

The regression results showed a significant relationship between Perceive Use of Online Learning Platforms on Students' Performance scores ($t = 6.720$, $p < 0.05$). The slope coefficient for User Interface Design was .149 so students' performance increases by a factor of .149.

Summary

The analysis of the collected data revealed that all four hypotheses used in this study are statistically significant, hence:

- ✓ Instructor's Online Presence in online learning platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p= .05$ (6%).
- ✓ Learning Content in online learning platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p= .05$ (6.9%).

- ✓ Interaction in online learning platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$ (11.5%).
- ✓ Perceive Use of online learning platforms has a significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$ (12.2%).

CHAPTER FIVE

DISCUSSION OF FINDINGS, RECOMMENDATIONS, AND CONCLUSION

The chapter aims the discussion of findings that were done under the pre-determined four hypotheses. The discussion of the findings was also related to the literature review, theories, and results gotten from the questionnaire. All of these were to see what common grounds exist between them. A summary of findings, conclusion, recommendations, suggestions for further studies, and limitations of the study was also done.

Presentation of findings

This study sets out to assess the effect of Online Learning Platforms on Students' Performance in Higher Institutions in Cameroon.

The findings of this research study were discussed based on the results of the verification of the four hypotheses concerning the empirical and theoretical reviews as well as the ideas put forward by some scholars on the effect of online learning platforms in Higher Institutions on students' performance. These results were discussed using the quantitative approach, in which these results were obtained from the questionnaire, analyzed, and correlated, and the results of their findings are discussed per hypothesis as analyzed below.

H_{a1}: The Instructor's Online Presence in online learning platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$.

H_{a2}: Learning Content in Online Learning Platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$.

H_{a3}: Interaction in Online Learning Platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$.

H_{a4}: Perceive Use of Online learning platforms has a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$.

Based on the results of the findings for hypothesis one, the scatterplot indicated that there was a strong positive linear relationship between Instructor's Online Presence in online Learning.

H₀₁: Instructor's Online Presence in Online Learning Platforms has a statistically significant influence on Students' Performance in Higher Institutions of learning in Cameroon at p=.05.

Regression was carried out to ascertain the extent to which Instructor's presence in online Learning Platforms scores predicts Students' performance scores.

The scatterplot showed that there was a strong positive linear relationship between instructors' online presence on online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.252$. The regression model predicted 6% of the variance. The model was a good fit for the data ($F(1, 325) = 21.972, p < 0.05$).

The next table is the F test. ANOVA results show that the linear regression F test has the null hypothesis that the instructor's online presence has no significant effect on students' performance, in other words $R^2 = 0.06$, with $F(1, 325) = 21.972, p = .000$, the test is highly significant, thus we can assume that there is a statistically significant effect of instructor's online presence in online learning platforms on students' performance in our model. This means that online learning platforms should have encouraged in all Higher Institutions in Cameroon as this will go along to improve students' performances positively. This finding agrees with Haji (2022), who's results found that Students have a high perception of using online learning platforms for blended Learning in Cameroonian Universities.

H_{a2}: Learning Content in online learning platforms has a significant influence on students' performance in Higher Institutions in Cameroon at p=5.

Regression was carried out to ascertain the extent to which Learning Content in Online Learning Platforms scores predict Students' performance scores.

The scatterplot showed that there was a strong positive linear relationship between learning content in online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.263$. The regression model predicted 6.9% of the variance. The model was a good fit for the data ($F(1, 325) = 24.230, p < 0.05$).

The next table is the F test. The linear regression F test has the null hypothesis that there is no statistically significant effect of Learning Content in online learning platforms and students' Performance. In other words $R^2 = 0.069$, with $F(1, 325) = 24.230, p = .000$, the test is highly significant, thus we can assume that there is a statistically significant effect of Learning Content and students' performance in our model. ANOVA results show that the linear regression F test has the null hypothesis that there is no statistically significant effect of Learning Content on students' performance in Higher Institutions in Cameroon at p=.05. In other words $R^2 = 0.069$, with $F(1,$

325) = 24.230, $p = .000$, the test is highly significant. Thus, we can assume that there is a statistically significant effect of an instructor's online presence in online learning platforms on students' performance in our model. This means that, when lecturers plan their content well, select teaching methods that will meet the objectives of all individual learners, start from simple to complex, frequently sends content, reply to their students, and provide feedback and remediation to slow learner, students will be motivated to learning through OLPs. These findings agree with Murray et al. (2012), who found that students tend to access only well-designed instructional materials help to improve the interactions between the instructor and students, and among students. Similarly, Eirini (2015), also found out that, Online Learning Platforms offer content such as slides, videos, blogs, and other resources designed to support existing course content and students who engage in large amounts of interaction with course content, using extra learning materials and resources to supplement classes, do so to support work with assignments.

Ha3: Interaction in online learning platforms has a significant influence on students' performance in Higher Institutions in Cameroon at $p=5$.

The scatterplot showed that there was a strong positive linear relationship between Interaction in online learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = 0.339$. The regression model predicted 11.5% of the variance. The model was a good fit for the data ($F(1, 325) = 42.277, p < 0.05$).

The next table is the F test. The linear regression F test has the null hypothesis that Interaction in online learning platforms has no statistically significant influence on students' Performance. In order words $R^2 = 0.115$, with $F(1, 325) = 42.277, p < 0.05$. The test is highly significant. Thus, we can assume that Interaction in online learning platforms significantly influences students' performance at $p = .05$ in our model. This teaching via online learning platforms will foster learning and improve students' performance in Higher Institutions in Cameroon. These findings agree (with Kara, 2020, and Oyarzun et al., 2018) who found that greater amounts of learner-learner interaction online leads to more effective learning overall. Also, (Ouyang and Chang, 2019) found out that, Students' levels of social participation in online discussions are indicators of their levels of cognitive engagement, pointing to a significant relationship between students' participation levels online thus, affecting their performance.

Ha4: Perceived use of online learning platforms has a significant influence on students' performance in Higher Institutions in Cameroon at $p=5$.

Regression was carried out to ascertain the extent to which Perceive Use in online Learning Platforms scores predict Students' performance scores.

The scatterplot showed that there was a strong positive linear relationship between Perceive Use in online line learning platforms and students' performance scores, which was confirmed with a Pearson's correlation coefficient of $r = .349$. The regression model predicted 12.2 % of the variance. The model was a good fit for the data ($F(1, 325) = 45.163, p < 0.05$).

The next table is the F test. The linear regression F test has the null hypothesis that Perceives Use has no significant influence on students' Performance in Higher Institutions in Cameroon. In order words $R^2 = 0.122$, with $F(1, 325) = 45.163, p < 0.05$. The test is highly significant. Thus, we can assume that Perceive Use of Online Learning Platforms is statistically significant on students' performance in our model. ANOVA results show that the linear regression F test has the null hypothesis that there is no statistically significant effect of Perceive Use of Online Learning Platforms on students' performance in Higher Institutions in Cameroon at $p=.05$. In order words $R^2 = 0.122$, with $F(1, 325) = 45.163, p = .000$. The test is highly significant. Thus, we can assume that there is a statistically significant effect of Perceive Use of Online Learning Platforms on students' performance in our model. The results of these findings are in agreement with (Oyarzun et al., 2018, Rhode, 2009, and Yuen et al., 2009) who found the importance of instructors to ensure that, learners are shown ways to integrate Online Learning Platforms into their learning.

Conclusion

This piece of work entitled "The Effect of Online Learning Platforms on Students' performance in Higher Institutions in Cameroon", was carried out with the main purpose to investigate the extent to which online learning platforms influence students' performance in Higher Institutions in Cameroon. Specifically, the objectives were: To find out the extent to which Instructor's online presence in online learning platforms influences students' performance in Higher Institutions in Cameroon, to verify how the Learning Content in online learning platforms influences students' performance in Higher Institutions in Cameroon, to examine the extent to which Interaction in online learning platforms influence Students' performance in Higher Institutions in Cameroon, to verify how Perceive Use influence Students' performance in Higher Institutions in Cameroon. A conceptual review was done based on the key concepts used in the study. Some related to the study were used such as The Cognitive Theory of Multimedia Learning, the Achievement Goal theory, and Social Performance theory. Furthermore, a review of the literature on the effect of Online

Learning Platforms was carried out with the use of research variables. The descriptive survey design was used for this study. The quantitative research methodology was used in this study. The sample size for this investigation was 327 respondents. The instrument that was used to collect data was the structured closed-ended questionnaire which was administered to students of the sampled Higher Institutions in Cameroon. The quantitative data were analyzed using descriptive and inferential statistics with the help of the SPSS V26. Simple linear regression was used to test the hypotheses.

From the findings, all the alternative hypotheses were retained at a P-Value of less than 0.05 indicating a very strong relationship between the instructor's online presence in online learning platforms, Learning Content relating to online learning platforms, Interaction in online learning platforms, and Perceive Use of online learning platforms have a statistically significant influence on students' performance in Higher Institutions in Cameroon at $p = .05$. The acceptance of all these four hypotheses permits the researcher to conclude that, online learning platforms are a significant determinant of students' performance in Higher Institutions in Cameroon.

The implication of the study

Instructor's Online Presence has a statistically significant influence on students' performance with an R^2 of 0.06 (6%) of variance in students' performance.

Learning content also statistically significant influence on students' performance with an R^2 of 0.069 (6.9%) of variance in students' performance.

Interaction has a statistically significant influence on students' performance with an R^2 of 0.115 (11.5%) of variance in students' performance.

Perceived use has a statistically significant influence on students' performance with an R^2 of 12.2% of the variance in students' performance. So, based on the findings above, all the alternative hypotheses (H_a) were retained while the null hypotheses (H_o) were rejected. The confirmation leads the researcher to conclude that the general hypothesis which was aimed at investigating the extent to which online learning platforms influence students' performance is positive. This indicates that online learning platforms in Cameroon should not be taken for granted, as validated by the regression Analysis which was used in testing the hypotheses.

Most of the respondents expressed how instructors' online presence, learning content, interaction, and perceive the use of these platforms have motivated them to have alternative means of learning which has boosted their performance.

However, the challenges encountered are real, and if well handled, online learning platforms will be the best alternative, to traditional face-to-face learning.

Recommendations

The findings of this research have deep significance for the enhancement of online learning by prioritizing inside and outside of students' performance in higher institutions of the study areas in particular and Cameroon as a whole. Specifically, the result of this research has the following importance on the students, teachers (lecturers), higher institutions, and the state of Cameroon.

To the Students

Engaging in active learning with instructional materials and access to a wealth of resources can facilitate the adoption of research-based principles and best practices from the learning sciences, an application that might improve students' performance without substantially increasing costs, Personalizing learning by building on student interests, can result in increased student motivation, time on task, and ultimately better student performance positively and making better use of teacher and student time by automating routine tasks and enabling teacher time to focus on high-value activities.

To Higher Institutions

Draft policies and curricula that will favour the creation of a healthy Instructor's online presence, learning content, interaction and perceived use, organise workshops to train staff on course content, teaching style, to ensure the development of good performance skills by graduates and hence promote their successful integration into the job market, Ensure that educators who instruct using online learning platforms receive comprehensive preparation for this medium by organizing workshops and seminars to provide professional development opportunities for online learning teachers. Higher institutions practicing online learning platforms need to constantly organize training workshops and seminars to enable educators to receive comprehensive preparation for the medium.

Also, to develop language for determining the intellectual property rights of online learning courses, Allow educators adequate preparation time for the development and delivery of online learning platforms courses, Ensure educators have the technical infrastructure and technical support before initiating online learning platforms education, Develop accountability mechanisms that assume instruction may occur beyond the normal school building or normal school hours, Provide Wifi connection in all the state University campuses so that students can have access to an internet connection for their online learning and subsidize monthly premium on Wifi services so that most students can afford Wifi services in and out of the campus.

To the State of Cameroon

Adopt policies that reflect teaching and learning that may occur beyond the normal school building walls, Develop teacher accreditation program criteria and teacher licensure criteria that ensure some pre-service preparation for instructing through online learning platforms, Ensure that state licensure requirements accommodate online learning courses that may be taught by licensed out-of-state educators, Expand professional development programs to prepare a cadre of educators who can effectively instruct online learning, Develop state policy for determining the quality and acceptability of online learning programs and above all, Grant scholarships to the top best students in all the state Universities in Cameroon. So that these students can study abroad to learn more skills which will go along increase competition among students thus, leading to students' performance.

Limitations of the Study

In the course of the study, the researcher encountered a series of challenges that can be said to have affected the findings of the study in one way or the other. Though some of these challenges hindered the efforts of the researcher, they were not enough to completely alter the course of the study. It is, however, important to state these challenges so that future researchers in related studies should be aware of them when embarking on such a study. These include:

The unwillingness of some respondents to collect and fill out the questionnaire. Some of the staff refused to collect and fill the questionnaire and they complained of lack of time, whereas others collected and did not fill it. Thus, it created some difficulties when analyzing the data as some of the questionnaire items were missing, The researcher had financial difficulties during the collection of data because some groups of teachers were being motivated with money to fill out the questionnaires, and at the level of the Higher Institutions used in the study, the researcher encountered some difficulties to collect statistics because it was based on several appointments.

Suggestions for further research

This dissertation was centered on the Effect of online learning platforms on students' performance in Higher Institutions in Cameroon. The study was conducted only in three state Universities out of the ten state Universities in Cameroon. Equally, this research project focused only on four variables of online learning platforms which are: Instructor's Online Presence, Learning Content, Interaction, and Perceive Use, with the dependent variable being Students' Performance. So since

this research work was carried out only at the University of Bamenda (UBa), University of Buea (UB), and University of Yaounde 1 (UY1), and the researcher focusing only on Postgraduate students/Master's students in the Faculty of Education of these three Universities, she recommends that a similar research work could be carried out on all the Universities in all the ten Regions of the country. Also, since the researcher's sample size was 327 students, a bigger sample could be used for further studies. The researcher can research other factors affecting teachers' effectiveness. This is because when we combine the variance of all the variables, we will have a total of 18.8% on 20, implying that other factors influence teachers' effectiveness such as environmental factors, supervision, and the use of didactic materials, just to name a few on which further.

REFERENCES

- Ahidjo, A. (1964). *Contribution to National Construction*, Paris: Presence Africaine.
- Alavi, M., & Dufner, D. (2005). Technology-mediated collaborative learning: A research perspective. *Learning together online: Research on asynchronous learning networks*, 28(17), 191-213.
- Allen, I. E., & Seaman, J. (2006). *Making the grade: Online education in the United States, 2006*. Needham, MA: Sloan-C.
- Al-Fraihat, D., Joy, M., & Sinclair, J. (2017, June). Identifying success factors for e-learning in higher education. In *International conference on e-learning 10(9)*, 247-255. *Academic Conferences International Limited*.
- Aloraini, S. (2012). The impact of using multimedia on students' academic achievement in the College of Education at King Saud University. *Journal of King Saud University- Languages and Translation*, 24(2), 75-82.
- Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-learning critical success factors during the covid-19 pandemic: A comprehensive analysis of e-learning managerial perspectives. *Education sciences*, 10(9), 216.
- Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, 35(4), 203-220.
- Ames, C. (1984). Achievement attributions and self-instructions under competitive and individualistic goal structures. *Journal of Educational Psychology*, 76(3), 478-487.
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84, 261-271.
- Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology*, 80(3), 260-267.
- Aminatun, D. (2019). ICT in university: How lecturers embrace technology for teaching. *Journal Smart*, 5(2), 71-80.
- Anderman, E., & Anderman, L. H. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology*, 25, 21-37.

- Anderson, T., Liam, R., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context, *45*(1), 136-149.
- Angelo, R., & McCarthy, R. (2018). Group Assignments as a Class Element to Promote Performance in Virtual Groups. *Information Systems Education Journal*, *16*(4), 4-12.
- Apandi, A. M., & Raman, A. (2020). Factors affecting successful implementation of blended learning at higher education. *International Journal of Instruction, Technology, and Social Sciences*, *1*(1), 13-23.
- Arbaugh, J. B. (2018). One bridge, (at least) two paths: Reflections on “virtual classroom characteristics and student satisfaction in internet-based MBA courses”. *Journal of Management Education*, *42*(4), 524-532.
- Armstrong, J., & Franklin, T. (2008). *A review of current and developing international practice in the use of social networking (Web 2.0) in higher education.*
- Arslan, S., Akcaalan, M., & Yurdakul, C. (2017). Science Motivation of University Students: Achievement Goals as a Predictor. *Universal Journal of Educational Research*, *5*(4), 681-686.
- Artino, A. R. (2008). Motivational beliefs and perceptions of instructional quality: Predicting satisfaction with online training. *Journal of computer assisted learning*, *24*(3), 260-270.
- Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, G. R., Philip, I., Richardson, J. C., Shea, P., & Swan, K. P. (2008). *The community of inquiry framework: Development, validation, and directions for further research.* Paper presented at the annual meeting of the American Education Research Association, New York, NY.
- Argyle, M., & Cook, M. (1976). *Gaze and mutual gaze.* London: Cambridge University.
- Argyle, M., & Dean, J. (1965). Eye contact, distance and affiliation. *Sociometry*, *28*, 289-304.
- Aswir, A., Hadi, M. S., & Dewi, F. R. (2021). Google meet application as an online learning media for descriptive text material. *Journal Studi Guru Dan Pembelajaran*, *4*(1), 189-194.
- Ayu, M. (2020). Online learning: Leading e-learning at higher education. *The Journal of English Literacy Education: The Teaching and Learning of English as a Foreign Language*, *7*(1), 47-54.

- Bandura, A. (1989). Self-regulation of motivation and action through internal standards and goal system. In L. A. Pervin (Ed.), *Goal concepts in personality and social psychology* (pp. 19–85). Hillsdale, NJ: Erlbaum.
- Barron, K. E., & Harackiewicz, J. M. (2001). Achievement goals and optimal motivation: Testing multiple goal models. *Journal of Personality and Social Psychology: Special Issue, 80*, 706–722.
- Barron, B. (2006). Interest and self-sustained learning as catalysts of development: A learning ecology perspective. *Human development, 49*(4), 193-224.
- Bayrak, F., & ALTUN, A. (2020). Development of online course satisfaction scale. *Turkish Online Journal of Distance Education, 21*(4), 110-123.
- Bell, F. (2011). Connectivism: Its place in theory-informed research and innovation in technology-enabled learning. *International Review of Research in Open and Distributed Learning, 12*(3), 98-118.
- Bereiter, C. (1990). Aspects of an educational learning theory. *Review of educational research, 60*(4), 603-624.
- Bervell, B., Umar, I. N., & Kamilin, M. H. (2020). Towards a model for online learning satisfaction (MOLS): re-considering non-linear relationships among personal innovativeness and modes of online interaction. *Open Learning: The Journal of Open, Distance and e-Learning, 35*(3), 236-259.
- Benbunan-Fich, R., Hiltz, S. R., & Harasim, L. (2005). The online interaction learning model: An integrated theoretical framework for learning networks. In S. R. Hiltz & R. Goldman (Eds.), *Learning together online: Research on asynchronous learning networks* (pp. 19-37). Mahwah, NJ: Lawrence Erlbaum Associates.
- Biocca, F. (1997). The cyborg's dilemma: Progressive embodiment in virtual environments. *Journal of Computer-Mediated Communication, 3*(2). Retrieved from <http://www.ascusc.org/jcmc/vol3/issue2/biocca2.html>

- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Tele operators & Virtual Environments*, 12(5), 456-480.
- Bozalek, V., Gachago, D., Alexander, L., Watters, K., Wood, D., Ivala, E., & Herrington, J. (2013). The use of emerging technologies for authentic learning: A South African study in higher education. *British Journal of educational technology*, 44(4), 629-638.
- Bozkurt, A. (2019). From distance education to open and distance learning: A holistic evaluation of history, definitions, and theories. In *Handbook of Research on Learning in the Age of Transhumanism (252-273)*. IGI Global.
- Butler, R. (1993). Effects of task- and ego-achievement goals on information seeking during task engagement. *Journal of Personality and Social Psychology*, 65(1), 18–31.
- Butler, R., & Neuman, O. (1995). Effects of task and ego achievement goals on help-seeking behaviors and attitudes. *Journal of Educational Psychology*, 87(2), 261–271.
- Burnett, P. C. (2002). Teacher praise and feedback and students' perceptions of the classroom environment. *Educational psychology*, 22(1), 5-16.
- Chae, S. W., Lee, K. C., & Seo, Y. W. (2016). Exploring the effect of avatar trust on learners' perceived participation intentions in an e-learning environment. *International Journal of Human-Computer Interaction*, 32(5), 373-393.
- Chen, A. H., Salaomi, S. N. W. M., & Nazri, A. N. A. (2022). Unimodal Learning Styles Predominate in Both Science and Non-Science University Students in Malaysia Using Vark. *Journal of Academia*, 10(1), 61-71.
- Chen, C. H., & Bradshaw, A. C. (2007). The effect of web-based question prompts on scaffolding knowledge integration and ill-structured problem solving. *Journal of research on Technology in Education*, 39(4), 359-375.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual review of psychology*, 55(1), 591-621.
- Christie, B., & Holloway, S. (1975). Factors affecting the use of telecommunications by management. *Journal of Occupational Psychology*, 48, 3-9.

- Christie, B., & Kingan, S. (1977). Electronic alternatives to the business meeting: Managers' choices. *Journal of Occupational Psychology*, 50, 265-273.
- Costley, J., & Lange, C. (2018). The moderating effects of group work on the relationship between motivation and cognitive load. *The International Review of Research in Open and Distributed Learning*, 19(1), 106-120.
- Costley, J., Southam, A., Bailey, D., & Haji, S. A. (2021). How use of learning management system mediates the relationships between learner interactions and learner outcomes. *Interactive Technology and Smart Education*.
- Crampton, A., Ragusa, A. T., & Cavanagh, H. (2012). Cross-discipline investigation of the relationship between academic performance and online resource access by distance education students. *Research in Learning Technology*, 20(1), 243-267.
- Daneji, A. A., Ayub, A. F. M., & Khambari, M. N. M. (2019). The effects of perceived usefulness, confirmation and satisfaction on continuance intention in using massive open online course (MOOC). *Knowledge Management & E-Learning*, 11(2), 201-214.
- Daumiller, M., Dickhäuser, O., & Dresel, M. (2019). University instructors' achievement goals for teaching. *Journal of Educational Psychology*, 111(1), 131.
- Daft, R. L., & Lengel, R. H. (1984). Information richness: A new approach to managerial behavior and organizational design. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (191-233). Homewood, IL: JAI Press.
- Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, 32(5), 554-571.
- Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987). Message equivocality, media selection, and manager performance: Implications for information systems. *MIS Quarterly*, 11(3), 355-366.
- Dede, C. (2005). Planning for neomillennial learning styles: Implications for investments in technology and faculty. *Educating the next generation*, 5(10), 1-32.

- Dennen, V. P., AubteenDarabi, A., & Smith, L. J. (2007). Instructor–learner interaction in online courses: The relative perceived importance of particular instructor actions on performance and satisfaction. *Distance education*, 28(1), 65-79.
- Du, X., Zhang, M., Shelton, B. E., & Hung, J. L. (2022). Learning anytime, anywhere: a spatio-temporal analysis for online learning. *Interactive Learning Environments*, 30(1), 34-48.
- Dunlap, J., & Lowenthal, P. (2018). Online educators' recommendations for teaching online: Crowdsourcing in action. *Open Praxis*, 10(1), 79-89.
- Dweck, C. S., & Elliott, E. S. (1983). Achievement motivation. In P. Mussen & E. M. Heatherington (Eds.), *Handbook of child psychology* (pp. 643–691). New York: Wiley.
- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256–273.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34(3), 169–189.
- Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 52–72). New York: Guilford.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72(1), 218–232.
- Elliott, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54(1), 5–12.
- Elliot, A. J., & Dweck, C. S. (2005). Competence and motivation: Competence as the core of achievement motivation. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 3–14). New York: Guilford.
- Elliot, A. J., & Thrash, T. M. (2001). Achievement goals and the hierarchical model of achievement motivation. *Educational Psychology Review*, 13(2), 139–156.
- Eom, S. (2009). Effects of interaction on students' perceived learning satisfaction in university online education: An empirical investigation. *International Journal of Global Management Studies*, 1(2), 60-74.
- Eom, S. B., & Ashill, N. (2016). The determinants of students' perceived learning outcomes and satisfaction in university online education: An update. *Decision Sciences Journal of Innovative Education*, 14(2), 185-215.

- Eom, S. B., Wen, H. J., & Ashill, N. (2006). The determinants of students' perceived learning outcomes and satisfaction in university online education: An empirical investigation. *Decision Sciences Journal of Innovative Education*, 4(2), 215-235.
- Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of e-learning facilities in the educational delivery system of Nigeria: a study of M-University. *International Journal of Educational Technology in Higher Education*, 15(1), 1-20.
- Franklin, U. E., & Nahari, A. A. (2018). The Impact of e-learning on academic performance: preliminary examination of King Khalid University. *Development*, 7(1), 83-96.
- Fryer, J. W., & Elliot, A. J. (2007). Stability and change in achievement goals. *Journal of Educational Psychology*, 99(4), 700–714.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Gee, J. P. (1996). *Social linguistics and literacies: Ideology in discourses* (2nd ed.). New York: RoutledgeFalmer.
- Grubb, A., & Hines, M. (2000). Tearing down barriers and building communities: Pedagogical strategies for the web-based environment. In R. A. Cole (Ed.), *Issues in Web-based pedagogy: A critical primer* (pp. 365-380). Westport, CT: Greenwood Press.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2/3), 147-166.
- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *The American Journal of Distance Education*, 11(3), 8-26.
- Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2016). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology*, 4(2), 38-57.

- Gosper, M., Malfroy, J., & McKenzie, J. (2013). Students' experiences and expectations of technologies: An Australian study designed to inform planning and development decisions. *Australasian Journal of Educational Technology*, 29(2), 109-125.
- Guldborg, K., & Pilkington, R. (2007). Tutor roles in facilitating reflection on practice through online discussion. *Journal of Educational Technology & Society*, 10(1), 61-72.
- Haji, S. A. (2020). Exploring the frequent use of the learning management systems (lms) features and learners' interactions in higher education *European Journal of Open Education and E-learning Studies*, 5(2), 154-190.
- Halverson, L. R., & Graham, C. R. (2019). *Learner engagement in blended learning environments: A conceptual framework*. *Online Learning*, 23(2), 145-178.
- Han, Z. M., Huang, C. Q., Yu, J. H., & Tsai, C. C. (2021). Identifying patterns of epistemic emotions with respect to interactions in massive online open courses using deep learning and social network analysis. *Computers in Human Behavior*, 19(4), 122-250.
- Harackiewicz, J., Barron, K., & Elliot, A. (1998). Rethinking achievement goals: When are they adaptive for college students and why? *Educational Psychologist*, 33(1), 1–21.
- Harackiewicz, J. M., Barron, K. E., Carter, S. M., Lehto, A. T., & Elliot, A. J. (1997). Predictors and consequences of achievement goals in the college classroom: Maintaining interest and making the grade. *Journal of Personality & Social Psychology*, 73(6), 1284–1295.
- Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Th rash, T. M. (2002a). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology*, 94(3), 638–645.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002b). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology*, 94(3), 562–575.
- Harackiewicz, J. M., & Elliot, A. J. (1993). Achievement goals and intrinsic motivation. *Journal of Personality and Social Psychology*, 65(5), 904–915.
- Horn, M. B., & Staker, H. (2011). The rise of K-12 blended learning. *Innosight institute*, 5(1), 1-17.

- Hoskins, S. L., & Van Hooff, J. C. (2005). Motivation and ability: which students use online learning and what influence does it have on their achievement? *British journal of educational technology*, 36(2), 177-192.
- Howland, J. L., & Moore, J. L. (2002). Student perceptions as distance learners in Internet-based courses. *Distance education*, 23(2), 183-195.
- Hsu, M. H., Ju, T. L., Yen, C. H., & Chang, C. M. (2007). Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. *International journal of human-computer studies*, 65(2), 153-169.
- Iftakhar, S. (2016). Google classroom: what works and how. *Journal of Education and Social Sciences*, 3(1), 12-18.
- Jiang, A. L., & Zhang, L. J. (2021). University teachers' teaching style and their students' agentic engagement in EFL learning in *China*: a self-determination theory and achievement goal theory integrated perspective. *Frontiers in psychology*, 12(5), 187-220.
- Kavrayici, C. (2021). The relationship between classroom management and sense of classroom community in graduate virtual classrooms. *Turkish Online Journal of Distance Education*, 22(2), 112-125.
- Kazmer, M. M. (2005). Community-embedded learning. *The Library Quarterly*, 75(2), 190-212.
- Kendall, M. (2001). Teaching online to campus-based students: The experience of using WebCT for the community information module at Manchester Metropolitan University. *Education for information*, 19(4), 325-346.
- Kordrostami, M., & Seitz, V. (2021). Faculty online competence and student affective engagement in online learning. *Marketing Education Review*, 7(12), 1-15.
- Kuna, A. S. (2012). Learner interaction patterns and student perceptions toward using selected tools in an online course management system. *Iowa State University* 14(3), 179-192.
- Kuo, Y. C., Walker, A. E., Belland, B. R., Schroder, K. E., & Kuo, Y. T. (2014). A case study of integrating Interwise: Interaction, internet self-efficacy, and satisfaction in synchronous online learning environments. *International Review of Research in Open and Distributed Learning*, 15(1), 161-181.

- Kuo, Y. C., Walker, A. E., Schroder, K. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *The internet and higher education*, 20(3), 35-50.
- Lai, C. H., Lin, H. W., Lin, R. M., & Tho, P. D. (2019). Effect of peer interaction among online learning community on learning engagement and achievement. *International Journal of Distance Education Technologies (IJDET)*, 17(1), 66-77.
- Landrum, B., Bannister, J., Garza, G., & Rhame, S. (2021). A class of one: Students' satisfaction with online learning. *Journal of Education for Business*, 96(2), 82-88.
- Liu, H., Eldarrat, F., Alqahtani, H., Reznik, A., De Foy, X., & Zhang, Y. (2017). Mobile edge cloud system: Architectures, challenges, and approaches. *IEEE Systems Journal*, 12(3), 2495-2508.
- Liu, Z. Y., Lomovtseva, N., & Korobeynikova, E. (2020). Online learning platforms: Reconstructing modern higher education. *International Journal of Emerging Technologies in Learning (iJET)*, 15(13), 4-21.
- Lowenthal, P. R., & Dunlap, J. C. (2018). Investigating students' perceptions of instructional strategies to establish social presence. *Distance Education*, 39(3), 281-298.
- Lowenthal, P. R., Humphrey, M., Conley, Q., Dunlap, J. C., Greear, K., Lowenthal, A., & Giacumo, L. A. (2020). Creating accessible and inclusive online learning: Moving beyond compliance and broadening the discussion. *Quarterly Review of Distance Education*, 21(2), 1-82.
- Lutz, C. (2019). Digital inequalities in the age of artificial intelligence and big data. *Human Behavior and Emerging Technologies*, 1(2), 141-148.
- McIntosh, K., Hirsch, M. S., & Bloom, A. J. L. I. D. (2020). Coronavirus disease 2019 (COVID-19): Epidemiology, virology, and prevention. *Lancet. Infect. Dis*, 1(4), 214-239.
- Miao, J., Chang, J., & Ma, L. (2022). Teacher–Student Interaction, Student–Student Interaction and Social Presence: Their Impacts on Learning Engagement in Online Learning Environments. *The Journal of Genetic Psychology*, 24(3)1-13.
- Miwa, K., Morita, J., Nakaike, R., & Terai, H. (2014). Learning through intermediate problems in creating cognitive models. *Interactive Learning Environments*, 22(3), 326-350.

- Mpungose, C. B. (2021). Students' reflections on the use of the Zoom video conferencing technology for Online learning at a South African University. *International Journal of African Higher Education*, 8(1), 159-178.
- Murray, M. C., Pérez, J., Geist, D., & Hedrick, A. (2012). Student interaction with online course content: Build it and they might come. *Journal of Information Technology Education: Research*, 11(1), 125-140.
- Navarro, P., & Shoemaker, J. (2000). Performance and perceptions of distance learners in cyberspace. *American journal of distance education*, 14(2), 15-35.
- Ngoungouo, A. (2017). The use of ICTs in the Cameroonian school system: A case study of some primary and secondary schools in Yaoundé. *International Journal of Education and Development using ICT*, 13(1).
- Njenga, J. K., & Fourie, L. C. H. (2010). The myths about e-learning in higher education. *British journal of educational technology*, 41(2), 199-212.
- Oben, A. I. (2021). Higher Education Objectives Impact towards the Attainment of Cameroon's Vision 2035 with Respect to Poverty Alleviation, and National Unity and Consolidation of Democracy. *Open Access Library Journal*, 8(6), 1-21.
- Oben, A. I. (2021). Higher Education Objectives Impact towards the Attainment of Cameroon's Vision 2035 with Respect to Poverty Alleviation, and National Unity and Consolidation of Democracy. *Open Access Library Journal*, 8(6), 1-21.
- Parker, R. E., Bianchi, A., & Cheah, T. Y. (2008). Perceptions of instructional technology: Factors of influence and anticipated consequences. *Journal of Educational Technology & Society*, 11(2), 274-293.
- Quaye, S. J., & Johnson, M. R. (2016). How Intergroup Dialogue Facilitators Understand Their Role in Promoting Student Development and Learning. *Journal on Excellence in College Teaching*, 27(2), 29-55.
- Rahmatullah, A. S., Mulyasa, E., Syahrani, S., Pongpalilu, F., & Putri, R. E. (2022). Digital era 4.0: The contribution to education and student psychology. *Linguistics and Culture Review*, 5(6), 89-107.

- Ramzitdinovna, D. B. (2022). Introduction of distance learning technologies in the organization of the educational process of the higher school. *Ta'limfidoyilari*, 25(5), 142-148.
- Ramzitdinovna, D. B. (2022). New Approaches to Interactive Learning Technology. *Innovative Developments and Research in Education*, 1(6), 98-101.
- Rao, N. J. (2020). Outcome-based education: An outline. *Higher Education for the Future*, 7(1), 5-21.
- Razzak, F., Shaikh, S., & Siddiqui, A. (2019). Exploring Effects of Learning Styles on Learning Outcomes. *New Horizons*, 13(1), 1992-4399.
- Richardson, J. C., Besser, E., Koehler, A., Lim, J., & Strait, M. (2016). Instructors' perceptions of instructor presence in online learning environments. *International Review of Research in Open and Distributed Learning*, 17(4), 82-104.
- Riopel, M., Nenciovici, L., Potvin, P., Chastenay, P., Charland, P., Sarrasin, J. B., & Masson, S. (2019). Impact of serious games on science learning achievement compared with more conventional instruction: an overview and a meta-analysis. *Studies in Science Education*, 55(2), 169-214.
- Rogers-Shaw, C., Carr-Chellman, D. J., & Choi, J. (2018). Universal design for learning: Guidelines for accessible online instruction. *Adult learning*, 29(1), 20-31.
- Sahin, I. (2006). Detailed review of Rogers' diffusion of innovations theory and educational technology-related studies based on Rogers' theory. *Turkish Online Journal of Educational Technology-TOJET*, 5(2), 14-23.
- Salas-Pilco, S. Z. (2013). Evolution of the framework for 21st century competencies. *Knowledge Management & E-Learning: An International Journal*, 5(1), 10-24.
- Sari, F. M., & Oktaviani, L. (2021). Undergraduate Students' Views on the Use of Online Learning Platform during COVID-19 Pandemic. *Teknosastik*, 19(1), 41-47.
- Savastano, M., Zentner, H., Spremić, M., & Cucari, N. (2022). Assessing the relationship between digital transformation and sustainable business excellence in a turbulent scenario. *Total Quality Management & Business Excellence*, 22(3), 1-22.

- Shank, P., & Sitze, A. (2004). *Making sense of online learning: A guide for beginners and the truly skeptical*. San Francisco: Pfeiffer.
- Shea, P. J., Fredericksen, E., Pickett, A., Pelz, W., & Swan, K. (2001). Measures of learning effectiveness in the SUNY learning network. In J. Bourne & J. C. Moore (Eds.) *Online education, volume 2: Learning effectiveness, faculty satisfaction, and cost effectiveness* (pp. 31-54). Needham, MA: SCOLE.
- Short, J. A. (1974). Effects of medium of communication on experimental negotiation. *Human Relations*, 27(3), 225-234.
- Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: John Wiley & Sons.
- Swan, K. (2003). Developing social presence in online course discussions. In S. Naidu (Ed.), *Learning and teaching with technology: Principles and practices* (pp. 147-164). London: Kogan Page.
- Swan, K., & Shih, L. F. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks*, 9(3), 115-136.
- Senko, C., & Tropiano, K. L. (2016). Comparing three models of achievement goals: Goal orientations, goal standards, and goal complexes. *Journal of Educational Psychology*, 108(8), 1178.
- Sgrô, F., Barca, M., Schembri, R., & Lipoma, M. (2020). Assessing the effect of different teaching strategies on students' affective learning outcomes during volleyball lessons. *Journal of Physical Education and Sport*, 25(20), 2136-2142.
- Shah, R. K., & Barkas, L. (2018). Analysing the impact of e-learning technology on students' engagement, attendance and performance. *Research in Learning Technology*, 26(14)55-83.
- Shamim, M. (2018). Application of cognitive theory of multimedia learning in undergraduate surgery course. *International Journal of Surgery Research and Practice*, 5(2), 1-6.

- Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and higher education*, 9(3), 175-190.
- Shea, P., Li, C. S., Swan, K., & Pickett, A. (2005). Developing learning community in online asynchronous college courses: The role of teaching presence. *Journal of Asynchronous Learning Networks*, 9(4), 59-82.
- Singh, R., & Awasthi, S. (2020). Updated comparative analysis on video conferencing platforms- zoom, google meet, microsoft teams, webex teams and goto meetings. *Easy Chair Preprint*, 40(26), 1-9.
- Sivo, S. A., & Cheng-Chang, P. (2005). Undergraduate Engineering and Psychology Students' Use of a Course Management System: A Factorial Invariance Study of User Characteristics and Attitudes. *Journal of Technology Studies*, 31(2), 94-103.
- Starkey, L., Yates, A., Meyer, L. H., Hall, C., Taylor, M., Stevens, S., & Toia, R. (2009). Professional development design: Embedding educational reform in New Zealand. *Teaching and teacher education*, 25(1), 181-189.
- Stewart, M., Stott, T., & Nuttall, A. M. (2011). Student engagement patterns over the duration of level 1 and level 3 geography modules: Influences on student attendance, performance and use of online resources. *Journal of Geography in Higher Education*, 35(01), 47-65.
- Stivason, C. T., Saunders, G., & Price, J. B. (2008). A comparison of student performance in an online introductory accounting course with traditional classroom students. *College Teaching Methods & Styles Journal*, 4(5), 1-8.
- Sulasmi, E. (2021). Effectiveness of modeling learning strategies to improve student learning outcomes. *Budapest International Research and Critics Institute Humanities*, 4(1)11-27.
- Sun, D., Cheng, G., Zhang, J., & Xu, P. (2019, October). MPOCs' Learner Interaction (MPOCsLI): An Instrument Design and Construct Validation Study. In 2019 *Eighth International Conference on Educational Innovation through Technology*, 29(6), 194-198.
- Suyu-Tattao, L. (2019). Communication style and learning style of students in a higher education institution. *International Journal of Advanced Research in Management and Social Sciences*, 8(6), 816-831.

- Swan, K. (2001). Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance education*, 22(2), 306-331.
- Tang, T. L. P., & Austin, M. J. (2009). Students' perceptions of teaching technologies, application of technologies, and academic performance. *Computers & Education*, 53(4), 1241-1255.
- Tafah, E.O.(1989). "*The Economics of Educational Investment in Cameroon*", an unpublished PhD Thesis, University of Lagos.
- Tallent-Runnels, M. K., Thomas, J. A., Lan, W. Y., Cooper, S., Ahern, T. C., Shaw, S. M., et al. (2006). Teaching courses online: A review of the research. *Review of Educational Research*, 76(1), 93-135.
- Teke, C. N. (2012). Digitalizing Learning Contents in Cameroon's Higher Education: Toward Standardizing a Critical Theory Course Site in the University of Yaounde I. Bhatte College *Journal of Multidisciplinary Studies*, 2(9) 66-75.
- Thurlow, C., Lengel, L., & Tomic, A. (2004). *Computer mediated communication: Social interaction and the Internet*. Thousand Oaks, CA: Sage.
- Tu, C.-H. (2000). On-line learning migration: From social learning theory to social presence theory in a CMC environment. *Journal of Network and Computer Applications*, 2, 27-37.
- Tu, C.-H. (2002a). The impacts of text-based CMC on online social presence. *The Journal of Interactive Online Learning*, 1(2). Retrieved from <http://www.ncolr.org/jiol/issues/PDF/1.2.6.pdf>
- Tu, C.-H. (2002b). The measurement of social presence in an online learning environment. *International Journal on E-Learning*, 1(2), 34-45.
- Tu, C.-H., & Corry, M. (2004). Online discussion durations impact online social presence. In C. Crawford. et al. (Ed.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2004* (pp. 3073-3077). Chesapeake, VA: AACE.
- Tu, C.-H., & McIsaac, M. (2002). The relationship of social presence and interaction in online classes. *The American Journal of Distance Education*, 16(3), 131-150.

- Tryana, T., Nasution, S. S., Saraswati, A., Sukmawati, N. N., & Astuti, P. P. (2022). Students learning Motivation in Learning English by Using Google Classroom. *Lexeme: Journal of Linguistics and Applied Linguistics*, 4(1), 65-71.
- Usman, Y. D., & Madudili, G. C. (2020). Assessment of the impact of computer-assisted instruction on teaching and learning in Nigeria: A theoretical viewpoint. *International Journal of Education and Development using Information and Communication Technology*, 16(2), 259-271.
- Uzoma, P. O., Amanze, B. C., Agbakwuru, A. O., & Agbasonu, V. C. (2022) Development of a Visual Semantic Web Ontology Based Learning Management System. *International Journal of Engineering Applied Sciences and Technology*, 10(6), 226-238.
- Vrasidas, C., & Glass, G. V. (2002). A conceptual framework for studying distance education. In C. Vrasidas & G. V. Glass (Eds.), *Distance education and distributed learning* (pp. 31-55). Greenwich, CT: Information Age Publishing.
- Wallace, R. M. (2003). Online learning in higher education: A review of research on interactions among teachers and students. *Education, Communication & Information*, 3(2), 241-280.
- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19, 52-90.
- Walther, J. B. (1994). Anticipated ongoing interaction versus channel effects on relational communication in computer-mediated interaction. *Human Communication Research*, 20, 473-501
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research*, 23(1), 3-43.
- Walther, J. B., Anderson, J. F., & Park, D. W. (1994). Interpersonal effects in computer-mediated interaction: A meta-analysis of social and antisocial communication. *Communication Research*, 21(4), 460-487.

- Walther, J. B., & Parks, M. R. (2002). Cues filtered out, cues filtered in. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (pp. 529-563). Thousand Oaks, CA: Sage.
- Williams, E. (1975). Medium or message: Communications medium as a determinant of interpersonal evaluation. *Sociometry*, 38(1), 119-130.
- Williams, E. (1977). Experimental comparisons of face-to-face and mediated communication: A review. *Psychological Bulletin*, 84(5), 963-976.
- Williams, E. (1978a). Teleconferencing: Social and psychological factors. *Journal of Communication*, 84, 125-131.
- Williams, E. (1978b). Visual interaction and speech patterns: An extension of previous results. *British Journal of Social and Clinical Psychology*, 17, 101-102.
- Wolters, C. A. (2004). Advancing achievement goal theory: Using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology*, 96, 236-250.
- Wu, X., He, Z., Li, M., Han, Z., & Huang, C. (2022). Identifying learners' interaction patterns in an online learning community. *International Journal of Environmental Research and Public Health*, 19(4), 22-45.
- Yadav, S. K., & Yadav, S. (2020). Explaining Online Education Adoption Using Technology Acceptance Model: An Analysis from Parents' Perspective. *IUP Journal of Information Technology*, 16(4) 18-30.
- Yamani, H. A., Alharthi, A. D., & Smirani, L. K. (2022). Evaluation of Learning Management Systems a Comparative Study between Blackboard and Brightspace. *International Journal of Emerging Technologies in Learning*, 17(7) 129-145.
- Yeboah, A. K., & Smith, P. (2016). Relationships between minority students' online learning experiences and academic performance. *Online Learning*, 20(4), 4-17.
- Yukselturk, E., & Yildirim, Z. (2008). Investigation of interaction, online support, course structure and flexibility as the contributing factors to students' satisfaction in an online certificate program. *Journal of Educational Technology & Society*, 11(4), 51-65.

Zusho, A., Karabenick, S. A., Bonney, C. R., & Sims, B. C. (2007). Contextual determinants of motivation and help seeking in the college classroom. In R. Perry & J. Smart (Eds.), *The scholarship of teaching and learning in higher education: An evidence-based perspective* (pp. 611–659). New York: Springer.

APPENDIXES

STUDENTS' QUESTIONNAIRE

Dear Respondents,

I am **AGWA JANE WASHIMA**, a Masters II student of Curriculum Development and Evaluation in the Faculty of Education at the University of Yaounde 1. I am carrying out a research work on **“The effect of Online learning platforms on students’ performance in Higher Institutions in Cameroon”**/*Je suis AGWA JANE WASHIMA, étudiante en Master II Développement et Evaluation Curriculum à la Faculté d'Education de l'Université de Yaoundé 1. Je réalise un travail de recherche sur « L'effet du E-Learning sur la performance des étudiants dans les Institutions Supérieures au Cameroun »*

Please, kindly give answers to the following questions as prescribed. Your honest response will be helpful to the study. This exercise is purely academic and your response will be kept confidential/*S'il vous plaît, veuillez répondre aux questions suivantes comme prescrit. Votre réponse honnête sera utile à l'étude. Cet exercice est purement académique et votre réponse restera confidentielle.*

Thank you. / Merci

Instructions : Kindly provide appropriate answers in the space provided and put a tick (✓), in the box with the correct answer of your choice. /*Instructions: Veuillez fournir les réponses appropriées dans l'espace prévu à cet effet et cocher (✓) la case correspondant à la bonne réponse de votre choix.*

Section A: Demographic information

1. Name of Institution _____

nom de l'institution

2. Name of Faculty _____

Nom de la faculté

3. Name of Department _____

Nom du département

4. Gender/Genre: male/masculine Female /Feminine

5. Age: 20-25 26-30 30+

6. Class: Master's I/First Year Student Master's II /Second Year Student

Classe: Étudiante en Master I / 1ère année Étudiante en Master II / Deuxième année

7. The online learning Platform used in your School: Google classroom Zoom

La plateforme de gestion de l'apprentissage en ligne utilisée dans votre école Moodle
 Google meet

KEY: SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree

Cle: SA = Très d'accord A = D'accord D = Pas d'accord SD = Pas du tout d'accord

Section B: Instructor's online presence in online learning platforms.

N°	Items	SA	A	D	SD
1	Course content/materials are frequently uploaded Google classroom/Google meet/Zoom/Moodle. / <i>Le contenu/matériel du cours est fréquemment téléchargé sur Google Classroom/Google Meet/Zoom/Moodle.</i>				
2	Instructors create room for students' frequent postings to discussion boards of the OLPs. / <i>Les instructeurs créent un espace pour les publications fréquentes des étudiants sur les forums de discussion.</i>				
3	I receive instant updates when using Google classroom/Google meet/Zoom/Moodle. / <i>Je reçois des mises à jour instantanées lorsque j'utilise Google Classroom/Google Meet/Zoom/Moodle.</i>				
4	Instructors usually engage in dialogue/discussions with students and provide feedback on Google classroom/Google meet/Zoom/Moodle. / <i>Les instructeurs engagent généralement des dialogues/discussions avec les étudiants et fournissent des commentaires sur Google Class/Google Meet/Zoom/Moodle.</i>				
5	Instructors send assignments through Google Classroom /Google meet/Zoom/Moodle. / <i>Les instructeurs envoient des devoirs via Google Salle de classe/Google meet/Zoom/Moodle.</i>				
6	I feel that the materials uploaded by lecturers on OLPs are easy to understand. / <i>Je pense que les documents téléchargés par les conférenciers sont faciles à comprendre.</i>				
7	I feel that our lecturer's communication style with students on the online learning platform is cordial. / <i>Je pense que le style de communication de notre professeur avec les étudiants sur la plateforme d'apprentissage est cordial.</i>				

Section C: Learning content in online learning platforms.

N°	Items	SA	A	D	SD
1	All postings on the online learning platforms are in line with the course objectives. <i>/Toutes les publications sur les plateformes d'apprentissage sont conformes aux objectifs du cours.</i>				
2	The learning activities on Google Classroom /Google meet/Zoom/Moodle are user friendly. <i>/Les activités d'apprentissage sur Google Classroom/Google meet/Zoom/Moodle sont conviviales</i>				
3	I feel that learning activities on Google Classroom /Google meet/Zoom/Moodle meet the needs of all individual learners. <i>/J'estime que les activités d'apprentissage sur Google Classroom/Google meet/Zoom/Moodle répondent aux besoins de tous les apprenants individuels.</i>				
4	The learning methods used in Google Classroom /Google meet/Zoom/Moodle meet the needs of all individual students. <i>/Les méthodes d'apprentissage utilisées dans Google Classroom/Google meet/Zoom/Moodle répondent aux besoins de tous les élèves.</i>				
5	Instructions relating to learning activities on Google Classroom /Google meet/Zoom/Moodle are easy to understand. <i>/Les instructions relatives aux activités d'apprentissage sur Google Classroom/Google meet/Zoom/Moodle sont faciles à comprendre.</i>				
6	The material/content given on online learning platforms can be easily downloaded and kept for further use. <i>/Le matériel/contenu fourni peut être facilement téléchargé et conservé pour une utilisation ultérieure.</i>				
7	All uploadings on Google Classroom /Google meet/Zoom/Moodle are accompanied by references for clarity. <i>/Tous les téléchargements sur Google Classroom/Google meet/Zoom/Moodle sont accompagnés de références pour plus de clarté.</i>				

Section D: Interaction in online learning platforms.

N°	Items	SA	A	D	SD
1	I feel that, all information posted by lecturers through Google classroom is easy to understand and use. / <i>Je pense que toutes les informations via Google Classroom sont faciles à comprendre et à utiliser.</i>				
2	I feel that Google classroom design allow me to have flexible time connection. / <i>Je pense que la conception de la salle de classe Google me permet d'avoir une connexion horaire flexible.</i>				
3	All functions on this software (Google classroom) are designed in appealing way. / <i>Toutes les fonctions de ce logiciel (salle de classe Google) sont conçues de manière attrayante.</i>				
4	Google classroom software is design in easy-to-search for information. / <i>Le logiciel de classe Google est conçu pour faciliter la recherche d'informations.</i>				
5	Google classroom is designed in user-friendly structure. / <i>La salle de classe Google est conçue dans une structure conviviale.</i>				

Section E: Perceive Use of online learning platforms.

N°	Items	SA	A	D	SD
1	The online learning platforms help me to obtain knowledge. / <i>Les plateformes de gestion de l'apprentissage m'aident à acquérir des connaissances.</i>				
2	Online learning platforms help me to get useful information when I need it. / <i>Les plateformes de gestion de l'apprentissage m'aident à obtenir des informations utiles quand j'en ai besoin.</i>				
3	Google classroom/Google meet/Zoom, help me to submit assignments. / <i>Google Classroom/Google Meet/Zoom, aidez-moi à soumettre des devoirs.</i>				
4	The online learning platforms help me to learn at my convenient. / <i>Les plateformes de gestion de l'apprentissage m'aident à apprendre à ma convenance.</i>				
5	The online learning platforms help me get feedbacks from my lecturers. / <i>Les plateformes de gestion de l'apprentissage m'aident à obtenir des retours de mes professeurs.</i>				
6	The online learning platforms help me to contact course mates.				

	<i>Les plateformes de gestion de l'apprentissage aident à contacter des camarades de cours.</i>				
7	I receive instant updates from lecturers, when using online learning platforms. / <i>Je reçois des mises à jour instantanées lorsque j'utilise les plateformes de gestion de l'apprentissage.</i>				

Section F: Students' Performance

In what range was your CGPA for masters?

Dans quelle fourchette se situait votre note dans le cours de méthodologie de la recherche ?

A+ – A-

B+ – B-

C+ – C-

D+ – E

F

AGWA Jane WASHIMA
20V3743
Masters II
Curriculum and Evaluation
Faculty of Education
University of Yaounde I

To the Dean
University of Yaounde I

An application for the authorization for the collection of data on the number of Masters
Students in the Faculty of Education from the period of 2020-2022 academic year.

Sir,

I have the honour, most respectfully to ask for your permission to collect data relating to the total enrolment of all the masters students in the Faculty of Education, from 2020-2022 academic years.

I am a student of the above Faculty, in the Department of Curriculum and Evaluation, carrying out dissertation on the topic "*Effect of Online Learning Platforms on Students' Performance in Higher Institutions in Cameroon*" and University of Yaounde I is among my sample.

This information is purely for research work and the data will be helpful to this study. So, I will be grateful if my application will be granted.

Yours faithfully,



2022-06-16

Dr. Akoh Achille Eanyi

REPUBLIQUE DU CAMEROUN
 PAIX-Travail-Patrie

 UNIVERSITE DE YAOUNDE I

 FACULTE DES SCIENCES DE
 L'EDUCATION

 DEPARTEMENT DE CURRICULA ET
 EVALUATION



REPUBLIC OF CAMEROON
 Peace-Work-Faithfulness

 UNIVERSITY OF YAOUNDE I

 FACULTY OF EDUCATION

 DEPARTEMENT OF CURRICULUM
 AND EVALUATION

The Dean

N° _____/21/UY1/FSE/VDSSE

AUTHORISATION FOR RESEARCH

I the undersigned, Professor BELA Cyrille Bienvenu, Dean of the Faculty of Education, University of Yaoundé I, hereby certify that AGWA Jane Washima, Matricule 20V3743, is a student in Masters II in the Faculty of Education, Department: *CURRICULUM AND EVALUATION*. Specialty: *DEVELOPER AND EVALUATOR OF CURRICULUM*.

The concerned is carrying out a research work in view of preparing a Master's Degree, under the supervision of Pr. NDI Julius Nsami. Her work is titled « *The effect of E-learning on students' performance in some selected Higher Institutions in Yaounde* ».

I would be grateful if you provide her with every information that can be helpful in the realization of his research work.

This Authorization is to serve the concerned for whatever purpose it is intended for.

Done in Yaoundé..... 15 DEC 2021

For the Dean, by order



Pr. Auguste GWOND-KOUMA