DIVERSIFIED ONLINE CHAT AND STORAGE FOR STUDENTS (DOCSS)

A Technology Research

Presented to the

Basic Arts and Sciences Department

Bachelor of Technical-Vocational Teacher Education

Technological University of the Philippines – Taguig Campus

In Partial Fulfillment of the Requirements in   
Technology Research

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# APPROVAL SHEET

The research project hereto titled

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CHAPTER I

# INTRODUCTION

## 1.1 Background of the Study

Cloud storage is defined as the provision of storage to a user via a platform. They can access cloud storage in a variety of ways, including by allocating storage and specifying the duration for which it will be used. (Fu, Ju, Lin, et al., 2011). Online storage is one of the services that let the users store data and make it available online. It is applicable to all the users, whether in business, school purposes, or for personal use. Cloud storage plays a crucial role in a person’s daily life, it helps the users to save their information/data at anytime and anywhere and it also help them save storage, especially for the mobile phone users. Cloud storage is an opportunity to download your files on the server with an ability to access to them from any gadget and any place. Before this innovation appeared, people have been exchanging files in different social networks (like Facebook) and used material storage drives. In fact, they still devote their data to material drives. That is why, currently, not all of the users understand the necessity of using cloud storage. (Everett, 2017).

In this study, the researchers wanted to diversify and add new features for the online cloud storage. The DOCSS (Diversified Online Chat Storage for Student) offers a great service to all the users, especially to all the students during this time of pandemic. This innovative service will help the users to lessen the possible storage space, through this, all the important files, data, etc. will be instantly stored in the user’s personal cloud storage that they may open anytime and anywhere. Its added features will let the users to sort their files/documents in an organized way. Aside from that, DOCSS also ensures the security and data privacy of the users. The users can share the whole folder to a specific person, and the folder that have been shared can be viewed, edit, and sort out by that specific person. These features are essential especially to all the students who will use it in the future. It is very handy and manageable, that it doesn’t require you to carry anything except for the phone and any gadget you are using. According to Everett (2017), there are reasons why we should use an online cloud storage instead of carrying flash drive every day. First is to optimize cooperation, Cloud drives are an excellent tool for transferring data instantly. This service is ideal for both remote and in-housework due to the ability to give access to multiple people. Every day, people have a need to share information with anyone from their group. The users can organize any folders, files or documents with their cloud storage and can give limit access to only certain people. Another advantage of cloud servers is their ability to interact with various online office services that allow for automated file sharing. Next is create back up for private files. When a computer or smartphone stops working, the owners of these devices suffer first from loss of money, and then from the loss of data. However, users can now avoid these incidents by securing their digital data. Using cloud storage as a storage site for their files helps to ensure that they are safe. All storages include an "auto-upload" feature, which allows the user to synchronize and download the photos in the cloud as soon as it is taken. Third is protect work from being wasted. People are well aware of all unexpected events that may occur with their PC while at work, but they frequently fail to take actions to protect themselves from unexpected situations. For example, the electricity in their neighborhood may go out. As a result, their device will be turned off, and the task file will not be saved. Under the threat of new voltage frisk, they’ll have to start from the beginning. Lastly, get more space for less money. It is less expensive to pay a small fee for limitless cloud storage than to purchase and maintain a large amount of hard disk storage space. Users of cloud storage services can take advantage of low-cost options. For example, Dropbox, a popular cloud storage provider, offers 2GB of free storage. It's sufficient to synchronize your smartphone data and preserve at least text documents. If your needs necessitate additional storage, there are other choices available.

This online cloud storage is helpful in so many ways, aside from its conveniency, it also gives assurance to the users. There are lots of benefits that the users could get. According to Singh (2020), cloud storage has become one of the most convenient and efficient methods to store data online. There are many storage service providers on the internet, and this area is so vast now every big tech company owns a separate storage facility, which helps to generate a significant margin of revenue from the users. In cloud storing, the user, rather than saving the data at local storage or hard disk, stores data somewhere at the remote location, which can be accessed using internet service. There are various cloud storage service providers who sell storage services for different ranges. This online cloud storage is beneficial to all the users, not only to the students and working individuals. There are ten (10) benefits of using cloud storage according to Singh (2020). The [usability and accessibility](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#usability), security, cost-efficient, [convenient sharing of files](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#sharing), [Automation](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#automation), [multiple users](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#multiple), [synchronization](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#synchronization), [convenience](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#convenience), [scalable](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#scalable), [disaster recovery](https://cloudacademy.com/blog/10-benefits-of-using-cloud-storage/#recovery). Aside from the benefits/ advantages of cloud storage, users may also experience some problems in using it. The drag and drop, internet dependency, data security and privacy, and expensive cloud storage. Nevertheless, it is way more accessible and manageable especially in today’s time wherein people rely on technology.

In reference to Odun-Ayo et. al (2017) Even data and databases may benefit from the Cloud's vast storage capacity. One of the most important aspects of Cloud computing is data storage. To maintain data security, Cloud storage takes use of the internet, virtualization, encryption, and other technologies. Cloud storage is a functional paradigm that is advancing and making IT usage easier for customers by the day. Cloud computing enables customers with standardized programs that are accessible online and on a regular basis. Such apps can be used by as many people as are allowed within an organization without having to worry about their upkeep. The Cloud also allows users to create and deploy user applications, including storage and databases, without having to worry about the underlying operating system.

Individuals are storing their data on the Internet as cloud services become more popular. (Pottier, et. al, 2016) The described cloud storage service allows customers to organize their data using two different approaches. To begin, users select an approach for storing their files. Before transferring documents to the storage provider, this method divides them into chunks. As a result, the storage provider has no idea how user data is arranged and so is unable to read user documents. Second, the cloud storage service collaborates with many storage providers to keep user data scattered across multiple locations, reducing the risk of data loss or theft from a single storage source.

Cloud computing is a popular aspect these days, and it is gradually becoming significant in all aspects of life. Online cloud storage offers cloud data storage and management; large Internet corporations are disclosing their cloud network disks to the public; users may upload their own files to the cloud and then access them from a variety of devices and areas.

## 1.2 Problem Statement

The purpose of this study is to address the issue of students who are having difficulty storing and accessing data on their gadgets because of a large number of files and limited storage space available to them. Technology played a crucial role in education, however, when the pandemic strikes, students have utilized their devices, not only for the online course but also in downloading documents and other programs. The researchers will create an online chat and storage for students so that they can easily access and share files in school and communicate with their classmates especially this time of pandemic where schools are using the online class method. It is web-based storage, so it doesn't need to download, and it is accessible in any browser available on their devices. Not every student has access to a high-end device with enough memory to store files with up to 32 gigabytes of storage capacity. Students will benefit from developing cloud-based storage since it will allow them to save space on their devices' storage and avoid their devices from experiencing performance issues such as screen freezing.

## 1.3 Objectives

### 1.3.1 General Objectives

To design, develop, and evaluate the Diversified Online Chat and Storage for Students (DOCSS) of BTVTE of Technological University of Philippines – TUP Taguig.

### 1.3.2 Specific Objectives

**1.3.2.1** How will the computer expert evaluate the design and development of DOCSS in terms of:

* + - * 1. Design
        2. Content
        3. Functionality
        4. Reliability
        5. Competency

**1.3.2.2** How will the students evaluate the design and development of DOCSS in terms of:

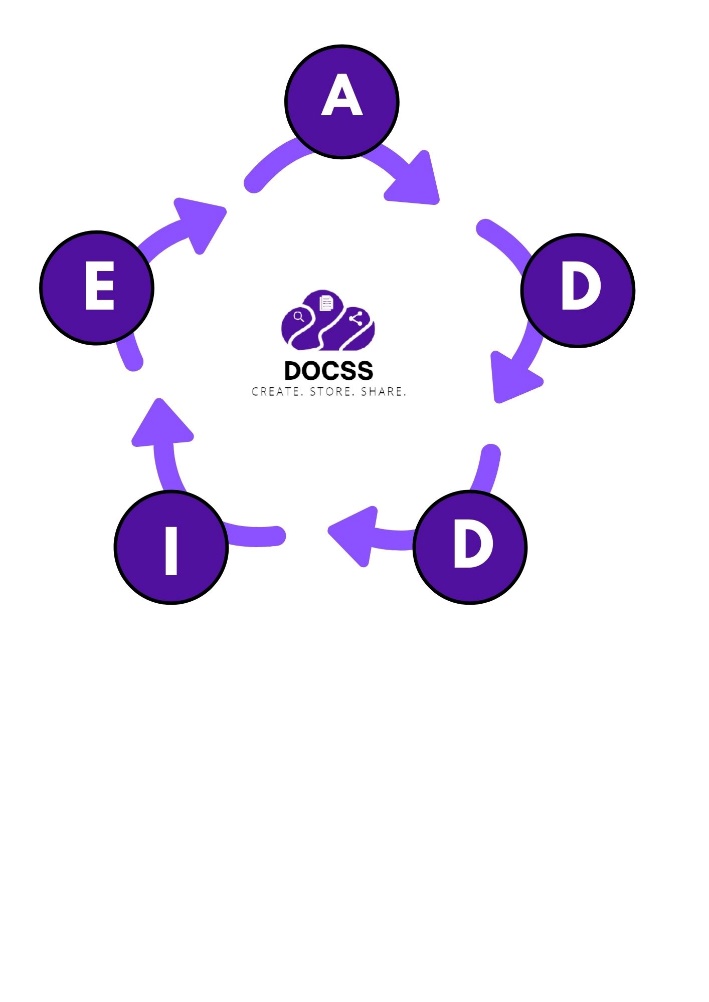
* + - * 1. Design
        2. Content
        3. Functionality
        4. Reliability
        5. Competency

**1.3.2.3** How will the teachers evaluate the design and development of DOCSS in terms of:

* + - * 1. Design
        2. Content
        3. Functionality
        4. Reliability
        5. Competency

**1.3.2.4** What are the new and unique features of Diversified Online Chat and Storage for Students that differs from other online storage.

## Conceptual Framework

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**Figure 1.4.1. ADDIE Model**

The ADDIE Model (Analyze, Design, Develop, Implement and Evaluate) is the "Goal-Setting Stage" of the design process, the Analysis phase, in which the developer focuses on the intended audience. It is also that perhaps the application fits each student's or participant's degree of competence and intelligence. The researchers used ADDIE Model in the reason that the framework includes a consistent structure, allowing educators to understand exactly what to do next after each step. The evaluation section gives outcome to the instructor and suggests areas where the guide areas that need improvement.

There are issues that cloud storage encounters when the user utilizes it. The issues are as follows: the need of extra storage, unorganized files, and weak security for the users, and large number of possible viewers. These issues are detected while using the ADDIE Model. The participants include students and faculty of TUP-T.

The researcher’s design will last for 2 – 3-month duration in order for us to think thoroughly and enhance our website. The exercises that we would conduct is Surveys, Trial and Error, and Gantt chart. The researcher’s objective is to create an online cloud storage that will enable students and faculty to use this website as their back-up storage for educational purposes. The website would also provide the best platform for saving of files and data.

Graphical user interface, application

Description automatically generatedMock-Up Design:

**Figure 1.4.2. Website Log-In Page**

Graphical user interface, application

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**Figure 1.4.3. Website Dashboard Page**

To implement this application, the researchers would evaluate the effectiveness and efficiency of the cloud storage. In addition, the researchers will test whether the files can be stored in databases.

The process of evaluating will be monitoring whether there are bugs and errors and improve the errors. The researchers will keep in check for up-to-date cloud system based on the latest trends and needs.

## 1.5 Significance of the Study

While there is a sudden shift of classroom settings from traditional to conducting online classes, it is inevitable for students to worry about the clump of activities that are yet to be stored in their personal devices since we use digital documents. Not only these bunch of documents makes the device go slow, but also the videos, images that takes up the space in computers. Online storage is one of the solutions to these since it is free to upload file online while retaining and retrieving it anytime, this would be beneficial to them. With the enhanced design of the user interface, students would not have a hard time using it. This helpful online cloud storage is useful and comes in handy because in some instance if the connection may disappear any moment, it will be on hold and will resume once it is connected to the internet.

**Students.** Recipients will benefit for less risk of losing files, easy access of notes to retrieve anytime, and to share across several devices.

**University**. This technology research can be implemented in school system because it has a storage capacity of 15GB that helps the faculty in storing large data as well as it can be used as a back-up online storage.

**Future Researchers.** This will benefit future researchers who would take interest for further improvement of cloud storage that will serve as there additional springboard. This study will serve as a useful reference for researchers who will conduct similar studies.

## 1.6 Scope and Limitations

This research aims to create an online cloud storage that involves time, computers, computer software application, and number of personnel needed for the research to be completed. The estimated time range of the research from planning and designing to the final outcome of the software ranges from two to three months depending on the availability of the personnel and the stability of the internet.

Computers such as personal computer or laptop is needed for the creation of the online cloud storage as well as computer software application such as MySQL, PHP, JavaScript, and other related software. The research is limited only for the students and teachers at Technical University of the Philippines - Taguig Campus for the reason that it is still under development.

**Graphical user interface, application, map

Description automatically generatedFigure 1.6.1 Technological University of the Philippines-Taguig**

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## Definition of Terms

For clarity of interpretation, the researchers offer the following definitions of term.

DOCSS - Diversified Online Chat and Storage for Students.

Chat – It is a communication between the sender and the receiver over the internet. In this study, chat is used to communicate online with other people that can be also access on the website.

Data – It is an information that was stored and processed by the computer. In this study, data is the files, documents, images, videos, and audios of the users that can be stored in the cloud storage.

Device – It is a tool and equipment that is used to process a data from user’s input to perform a certain task. In this study, device is an electronic equipment that is used to access the cloud storage.

Cloud Storage – It is a type of storage that stores data using the internet. In this study, cloud storage is used to access and store the data of the users online.

Data Privacy – It is a data protection that manages sensitive and personal information of the users. In this study, data privacy is used to manage the online cloud storage to know how data is collected, used, and shared to other devices.

File – It is a folder in a particular order for preservation and easy reference. In this study, file is used to locate and separate the file of the user in the cloud storage easily.

Internet – It is a network system that allows the users to connect with the computer. In this study, internet is used to access the cloud storage on the website.

Security – It is the protection of computer systems and information from harm, theft, and unauthorized use. In this study, security is used to protect the data of the users in the cloud storage.

Sorting – It is a process that is used to organize data in a particular order. In this study, sorting is used to organize the data of the user in the cloud storage to find the information easily.

Website – It is a collection of numerous web pages that can be accessed online by using a browser. In this study, website is used to access the cloud storage without using the device storage.

Chapter II

# REVIEW OF RELATED LITERATURE

This chapter discusses literature and research work found relevant to the topic on hand. It is divided into related literature and related studies. The latter is further divided into studies with local and foreign setting.

## 2.1 Related Literature

2.1.1 Cloud Storage

The cloud concept, which has recently become a big issue in technology, is actually rather ancient. Its origins may be traced back to the 1950s and 1960s. John McCarthy, a computer scientist, is considered as one of the original inventors of the cloud computing idea. In a lecture delivered to commemorate MIT's centennial in 1961, he was the first to openly propose that computer time-sharing technology may lead to a future in which computing power and even individual programs could be marketed via the utility business model (like water or electricity). The concept of a computer or information utility was popular in the late 1960s, but by the mid-1990s, it had lost its appeal.

The concept has returned in various forms since 2000 (see application service provider, grid computing, and cloud computing) (Lxkp, 2011). J.C.R. Licklider, a fellow computer scientist, is also acknowledged as one of the early pioneers of the cloud concept. J.C.R. Licklider, who was essential in the construction of ARPANET (Advanced Research Projects Agency Network), In the 1960s, presented the idea of a "intergalactic computer network." According to Margaret Lewis, product marketing director at AMD, his ambition was for everyone on the planet to be linked and able to access programs and data from any location, at any time. "It's a concept that sounds a lot like cloud computing," says the author (Weekly, 2009).

Cloud storage is a component of an even more extensive cloud computing concept. It's a service paradigm in which data is remotely maintained, managed, and backed up, then made available to users over a network (typically the Internet). One of the earliest organizations to offer cloud storage was FilesAnywhere.com. Their cloud storage service allowed customers to save data on their servers from any location at any time, as well as retrieve the data from any location at any time.

Cloud storage may be as simple as a single user with access to a single server. A user would use a device to upload his data and save it on a server for safekeeping. If that server were to go down, getting your data files would be difficult until that server was brought back online.

The principles of redundancy and repetition are used to establish cloud storage. The foundation of cloud storage is redundancy. At its most basic level, cloud storage is just storing up data enough times that the risk of losing it is almost non-existent. Having numerous data servers to store data reduces the likelihood of data loss. A single data server is enough, but 10 data servers is far superior.

All servers, even if they are composed of many, may function as if they are one by using an operating system. This is when repetition comes in handy. At the same time, each server is different yet identical. Each server has the same information. The real trick is repetition. Each server receives a copy of the user data. Each of the data servers receives its own copy of the data. If one copy on a server is altered, all other copies are updated to reflect the change. Cloud storage works because each server has the same information and is equipped with redundant infrastructure.

Cloud storage is a service that retains data, manages and backs it up remotely, and makes it available to customers through a network (via the internet). There are various cloud storage companies. Most companies provide free storage up to a specified amount of gigabytes. For example, DropBox offers 2GB of free storage, Google Drive, Box, Amazon, Apple Cloud offers 5GB of free storage, and Microsoft SkyDrive offers 7GB of free storage. If a customer exceeds the free space limit, they must pay the amount specified in the plan. Maximum file size, auto backup, bandwidth, and upgrading for restricted space vary from one provider to another. Customers that use cloud storage services save money on storage devices and don't need technical assistance for maintenance, backup, or disaster recovery.

When the client can store and manage data at a cheap cost through the use of cloud, the notion of cloud storage is not worth it. Therefore, the cloud should be structured in such a manner that it is cost effective, autonomous, multi-tenant, scalable, available, control, and efficient.

Cloud computing has played a vital part in changing the way information is stored and applications are operated in this era of technological developments. Rather of processing apps and data on a single system, nearly everything has been kept on the "Cloud." Cloud computing allows you to access data from any location in the globe and allows multiple persons and organizations to interact. Cloud storage allows businesses and organizations to store and share data and documents with their workforce. Cloud storage allows you to share data with others in the case of interaction. The goal is to provide dependability and redundancy in the event of a site breakdown.

Allan Liu stated that, cloud is a cloud computing model in which data is transmitted and stored on worldwide storage devices over the internet. Data is backed up and maintained on separate storage systems before being made available to users through the network (for example; internet). Cloud storage customers pay monthly to cloud storage providers based on their use rates.

The metaphor "cloud" was around before it was initially used as an analogy for the Network in diagrams, which is an "old idea whose (finally) time has come." Cloud computing is a new strategy for IT service sourcing that creates benefits for embracing enterprises, in line with the concept of shared services. Cloud storage is sometimes referred to as "Network cloud computing provider." Hold the potential to modify what organizations obtain and maintain internet resources in the best possible and expense manner.

Cloud storage is a subset of the larger concept of cloud computing. The National Institute of Standards and Technology (NIST) of the United States of America (US) defined this term as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011).

Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) are the three primary levels of cloud computing (Goscinski & Brock, 2010; Lian, 2015; Low, Chen, & Wu, 2011). End-users are served by SaaS, which provides applications on demand; developers are served by PaaS, which provides virtual access to computers and databases; and network architects are served by IaaS, which provides storage, servers, hardware, and other network components (Goscinski & Brock, 2010; Low et al., 2011). Cloud storage is present in all of the layers and cannot be identified as part of any of them.

Cloud Storage refers to the storage of data on the cloud rather than on a local system by a user, client, or company. Network connectivity as well as a client service are required for data access. Customers may access their data from any place, even though they do not have access to their organization's network, due to Cloud Storage (Galloway, 2013). Stronger wireless networks and growing BYOD (bring-your-own-device) use have increased dependency on online storage (Erturk & Iles, 2015).

Marks and Lozano (2010) define cloud computing as "on-demand access to virtualized IT resources outside the organization." These materials are open to the public, have a membership charge, and may be accessed over the Internet. It also allows for on-demand accessibility to organizations of highly elastic computing resources. Cloud computing encourages consumers to think of computers as limitless, inexpensive, and dependable. People, on either hand, appear unconcerned more about design, how it operates, or when it was installed. The cloud has the following four characteristics:

* Elasticity: When consumers require extra resources, the service or storage will be automatically provided. If the client does not require the service, however, it will be lowered.
* Self-service provisioning and automatic deprovisioning: Customers can request storage directly through self-service installation
* Application Programming Interfaces (APIs): Standard interfaces are beneficial because they facilitate communication between applications and data sources.
* Billing based on service usage: Companies pay for the services they consume (Hurwitz, Bloor & Kaufman, 2009).

Public Cloud - A public cloud is one that delivers services (such as apps and storage) through a connection that is open to the public and accessible to everyone. Subscription-based or other purchasing mechanisms are used to get public cloud services.

Private Cloud - A private cloud is a framework that provides services to a single company and is managed internally or externally. Privately dedicated server clouds are referred to as "externally hosted," whilst 3rd cloud - based clouds are referred to as "on premise."

Community Cloud - It involves the collaboration of computing infrastructure among customers and partners to the same community.

Hybrid Cloud - A hybrid cloud is a combination of private and public cloud services that are different from one another but are linked via standardized or proprietary technologies.

2.1.2 Cloud Computing

Cloud computing is a TCP/IP-based completely immoderate-diploma development and integration of laptop generation which consist of a short CPU, a massive amount of memory, a short network, and a consistent tool architecture. Cloud computing may now not be a fact if installation interconnect protocols and mature records center generation had been now not available. Cloud computing is TCP/IP-based completely immoderate development and integrations of laptop generation which consist of fast microprocessors, awesome memory, immoderate-speed networks, and sturdy tool design, as located out via IBM and Google in October 2007. Cloud computing may now not be a fact if installation interconnect protocols and mature records center generation had been now not available. In October 2007, IBM and Google launched a cloud computing collaboration.

From then on, the term "cloud computing" have become common. Aside from internet email, Amazon Elastic Compute Cloud (EC2), Google App Engine, and Salesforce CRM all represent a possible conceptual framework for cloud services. Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS) are the 3 most important forms of cloud computing services. Clients, applications, platform, infrastructure, and servers are all cut up into 5 ranges in cloud computing. The 5 layers appear like greater logical and easy than the 3 categories. More than 20 definitions of cloud computing exist, every specializing in a specific function of the technology.

Almost everyone, including IT companies, is talking about the cloud these days. Although cloud computing has no precise definition, it can be understood in a variety of ways [5]. Cloud computing is a concept for providing on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that may be swiftly supplied and released with minimal administrative effort or service provider contact.

Cloud computing, or just computing, is a type of dynamic application and storage that makes use of Internet technologies. On-demand self-service, broad network access, resource pooling, quick flexibility, and measured service are five main characteristics of cloud computing (Armbrust, Fox, Griffith, Joseph, Katz, Konwinski, & Zaharia, 2010). In addition, there are three key categories of cloud computing services: Infrastructure as a Service, Platform as a Service, and Software as a Service (Mell & Grance, 2011). Furthermore, cloud computing can be used in four different ways: public cloud, private cloud, community cloud, and hybrid cloud.

The benefits of cloud computing include increased processing power, storage, flexibility, scalability, and lower IT infrastructure overhead costs (Rajaraman, 2014). Startup companies were able to benefit from moving to a cloud environment by redirecting capital expenditures into operating expenditures, making cloud computing desirable while cutting IT expenses. The smallest businesses are the most likely to use cloud computing, whereas medium-sized businesses have lower prices, and businesses with less than a hundred employees have the lowest prices (Bloom & Pierri, 2018). Larger organizations have enough processing capacity in-house.Cloud computing, on the other hand, has several drawbacks (Ashari & Setiawan, 2011), such as the need for Internet access, speed, and direct access to resources. As a result, organizations may find it untrustworthy to rely solely on cloud-computing service providers. Any disruption in cloud services should cause businesses significant harm (Grigoriou, Retana, & Rothaermel, 2012). The main benefits, according to Karkonasasi, Baharudin, Esparham, and Mousavi (2016), are cost savings, security, privacy, and reliability. Stakeholders anticipate that the issues with cloud computing adoption will be lessened or eliminated in the near future.

Cloud computing has become a valuable asset for businesses looking to better serve their customers and stay competitive. Their mastery of data storage efficiency and effectiveness has created a demand for more storage space. As a result, service providers must seek to expand online data center capacity. According to Cisco (2018), the cloud stored 547EB of data in 2018. Firms benefit when more storage space becomes accessible, allowing them to store higher amounts of data. Companies can store, analyze, and gather useful information about customers' information, desires, and actions using these massive data caches (Duan, Fu, Zhou, Sun, Narendra, & Hu, 2015).

Cloud computing offerings are brought via statistics facilities placed all around the world. Cloud computing offerings consist of Microsoft SharePoint and Google apps, to call a few.

Security is critical to the widespread adoption of cloud computing services. The existing literature focuses on various security solutions, such as technology and security policy implementation. The latter study introduced new criminological attacks on the cloud environment. The proposed solution to these recent attacks is based on criminal theories for cloud security. A study discovered several security issues affecting cloud computing characteristics. The same study proposes solutions to the identified problems with cloud security. This research resulted in the development of a security guide, which allows cloud user organizations to be aware of security vulnerabilities and approaches to infiltrate them.

In recent years, information technology has evolved rapidly. With the increase of storage for consumers, cloud computing has given IT a more promising position. Vendors can now rent out their services on an hourly basis thanks to cloud computing. They also rent out space on their physical systems to users. These services, however, pose a number of security risks to users. Abuse, insecure interfaces, and unethical usage were identified as potential threats in a report by Cloud Security Alliance. Application program interfaces and cloud computing have been linked to these dangers.

Information security is divided into three main goals: integrity, confidentiality, and availability. Long-term confidentiality issues are a security threat to these security goals because current and past encryption schema are not secure. Another concern is the vulnerability to information leakage as data is outsourced. Data tampering also threatens data confidentiality.

The security and availability of cloud services are largely dependent on APIs that handle data access and encryption. More research may be done to ensure that these APIs and network interfaces are secure. New security ideas can address the issues of protecting services against malicious and unintentional attacks, as well as terms of service violations.

Cloud computing is an architecture for providing computing services over the internet on demand and on a pay-per-use basis to a group of shared resources, such as networks, storage, servers, services, and applications, without physically acquiring them. Cloud DBMS is a distributed database that provides computing as a service. It is the network-wide sharing of web infrastructure for resources, software, and information. The cloud is used for storage, and databases can be accessed and computed from any location. In this paper, I discussed the cloud and its applications. How we can implement cloud for improved performance, as well as the various benefits and drawbacks of cloud that we can improve in the future.

Web-based network management based on databases presents a viable mode for network information processing and has the characteristics of wide distribution, full interactivity, real-time dynamic, and so on in the application; and is beneficial to timely network performance adjustment and rapid fault recovery. A cloud database management system is critical for this purpose. Cloud computing is a broad term that refers to a new type of network-based computing that occurs over the Internet. Cloud Computing is a natural progression from Utility Computing. It is a collection/group of integrated and networked hardware, software, and Internet infrastructure, which provides hardware, software, and networking services to clients via the Internet. The advantage of this is that these platforms hide the underlying infrastructure's complexity and details from users and applications by providing a very simple graphical interface or API (Applications Programming Interface).

A significant distinctive feature of a thriving information technology (IT) sector is its capacity to contribute to cyberinfrastructure in an accurate, valuable, and cost-effective manner. Cloud computing is a broad term for a type of network-based computing in which a program or application runs on a linked server or servers rather than on a local computing device like a PC, tablet, or smartphone. Cloud computing is a distributed architecture for providing on-demand computer resources and services by centralizing server resources on a scalable platform. It is a shared Pool of configuration computing.

Cloud computing is a strategy, not a technology. Cloud computing is part of a larger plan to boost productivity, empower employees, and transform your company. We're dedicated to creating solutions that align with your company's vision and help it move forward with maximum flexibility and minimal risk.

In cloud computing, the phrase "cloud" refers to a cluster of networks. The user has unrestricted access to cloud computing modalities at any time. Users typically prefer a middleman provider for internet service in cloud computing over setting up their own physical infrastructure. Users must only pay for the services that they have used. The networks that make up the cloud handle the load of services, which is why the demand on local computers isn't too high when operating an application. As a result, user hardware and software requirements are reduced. To use cloud computing, all we need is a web browser.

Cloud computing offers three services: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS) [1]. Facebook, YouTube, Dropbox, and Gmail are some of the most common examples of cloud computing that people use on a daily basis. It provides scalability, flexibility, agility, and simplicity, which is why its use in enterprises is rapidly increasing.

2.1.3 Chat

In the last decade, Internet usage has expanded dramatically and quickly ("Internet Use Over Time," 2014). For most, if not all, businesses and organizations, websites have become the most significant public communication channel. According to the 2013 Internet User Demographics, 87 percent of American individuals aged 18 and above use the Internet. Website design is crucial in engaging users since business-to-consumer interactions are mostly conducted online (Flavián, Guinalu, & Gurrea, 2006; Lee & Kozar, 2012; Petre, Minocha, & Roberts, 2006). Users may become frustrated by poorly designed websites, resulting in a high "bounce rate," or the number of individuals who visit the home page without exploring the rest of the site (Google.com, 2015). Avouris, Tselios, Fidas, & Papachristos, 2003; Flavián et al., 2006; Lee & Kozar, 2012) discovered that a well-designed website with excellent usability had a beneficial impact on visitor retention (revisit rates) and purchase behavior.

However, little study has been done to determine the exact characteristics that make up good website design. Usability is one of the most important design criteria (International Standardization Organization, 1998). Usability is defined by the International Standardized Organization (ISO) as the degree to which users can complete desired tasks (e.g., access desired information or make a purchase) within a system with effectiveness (task completion and accuracy), efficiency (task time spent), and satisfaction (user experience). There is presently no agreement on how to appropriately operationalize and evaluate website usability (Lee & Kozar, 2012). Usability, for example, is linked to learnability, efficiency, memorability, mistakes, and satisfaction, according to Nielson (Nielsen, 2012). Usability, according to Palmer (2002), is defined by download time, navigation, content, interaction, and responsiveness. Many other critical design features, such as scannability, readability, and visual aesthetics, have yet to be fully defined, and there are no clear rules that individuals can follow when developing websites to promote engagement (Bevan, 1997; Brady & Phillips, 2003; Kim, Lee, Han, & Lee, 2002). According to previous research studies, the essential website design components that impact user engagement were identified and consolidated in this review.

The goal of this study was to find out which website design components are most frequently exhibited or suggested to boost user engagement. We created a short list of website design features that best encourage and predict user interaction based on our results. As a result, the work is an experimental study that provides definitions for key website design aspects as well as a beginning point for further research.

When education and technology are joined, they may create dynamic teaching and learning experiences that are specifically designed to grow and change the educators and learners needed to power the digital economy. However, for various reasons, a significant portion of the population, particularly students, is still unwilling to embrace technological progress in the field of education. The purpose of this study is to find out what variables influence students' adoption of e-learning technology in the Philippines, namely Learning Management Systems (LMS). Internet Connectivity Experience (ICE), Social Media Influence (SMI), Integrated Multimedia Instruction (IMI), System Interactivity (SI), and Perceived Quality Work of Life (PQWL) were included as additional predictor variables to the Technology Acceptance Model (TAM). The constructs were determined using the three-tier usage model (3-TUM), which was designed to investigate users' attitudes toward technology on three levels. The study's target group was Filipino students from colleges who are seen as champions of e-learning integration in the Philippine educational system. The data from 629 Filipino college students was examined using an AMOS-based structural equation modeling (SEM) methodology. Finally, from the perspective of information systems acceptance, a route model was developed to analyze the links between the components that explain students' adoption of e-learning technologies. Consequently, it presented practical and technical implications that might aid educational leaders, educational technologists, educators, and learners in the creation, deployment, and adoption of e-learning technology like LMS in local and global school contexts.

2.1.4 File Management

Cloud Computing Technology has brought numerous benefits to all areas of the industry, and as a result of these benefits, the number of files has increased. This article investigates the development of a file management system for managing and securing files. A file management system is used in cloud storage to ensure that the files are secure and authentic. Files can be stored and shared with other users with the help of a file management system.

An electronic document management system (EDMS) is used in managing and organizing the increasing number of electronic files saved on servers. An organization needs to have a document management system for storing, securing, and managing files. This article examines the development of a document management system with features of storing, securing, locating, and managing files. Researchers assessed the user's performances while using two file management system which is the traditional document management systems and the electronic document management systems. Some organizations have transferred from traditional to electronic document management systems because of the features and benefits. Organizations must adopt an electronic document management system to organize files and enhances work performances through effective file management.

An electronic document management system (EDMS) is the process of storing, searching, and managing electronic files effectively. The productivity of the company increases by searching and organizing files quickly with the help of document management system. A document management system helps the company in managing and securing their files and documents. This system will help the company to search and retrieve documents quickly. Having this system is the best way to improve file management within the company.

An electronic document management system (DMS) is vital in achieving an organization's success and efficient work performance. The government agencies should have an organized and secured document management system to protect the confidential documents. Companies should adopt a document management system because of increasing electronic files to stored, organized, and reduce the costs.

The features, benefits, and capabilities of electronic document management system (EDMS) are keeping the documents organized, stored, secured, and provide access. The increasing number of documents can be managed with the use of electronic document management systems that will help the company to manage and secured their files effectively.

Medical records are usually written using ink and paper. As time goes by, the ink will fade in the paper it can't be read and recovered anymore. Using Electronic Document Management System (EDMS), they can store and access the medical records of their patients efficiently, and also the productivity will increase due to the effective use of the system. The advantage of having EDMS is that the documents are secured from disasters like flood and fire because it is stored in a system. The records of the patients have a huge amount of space, and it requires a document management system to handle it.

At this time, Universities tend to create files that can be accessed and shared easily and efficiently with other people depending on what documents they need. They are using document management to access files that can be used in learning, preparing, and planning. An Electronic Document Management system is used to efficiently access, store and organize the documents of the university (Mustafa & Erguzen, 2015).

There are many functions of Document Management like storing, organizing, controlling, and retrieving information and documents. Having an effective Document Management system will help companies to have efficient and successful work. It is also used by other companies to facilitate and access stored documents. It can also reduce the cost and improve the efficiency and quality of work.

Systems for archiving document needs to be improved so that they can be used in the long term. It is also used for transferring data from one format to another. The functions of the system are to store, share, retrieve, and display documents to the users. The advantage of the Document Management System is to keep, create, and modify the documents of the user. Also, a digitization system can be used in companies, schools, and other paperwork. The reason why it is important is because of the ability to store information in the system. It can store books, pictures, paperwork, etc.

Electronic Document Management System can store and transfer files within the system. Storing a large number of files tend to have a longer procedure and waiting time to store. Using a QR code will increase the security for storing and verifying the information of the users. It is also to avoid other people to modify the program code of the system.

2.1.5 File Sharing

To send data, file sharing relies on computers establishing networks. Each computer (or node) on the network can agree to share certain files and file sharing software enables users to search for and download files from other computers on the network. Clients are nodes that request information; servers are nodes that fulfill requests, and peers are nodes that do both.

ICT provides users with the opportunity to electronically upload, access, and share files all over the world. This thing can increase the productivity of people's file sharing, it can handle the file in a good manner means it needs confidentiality and it is all about people's privacy so doing such a technology is the good way because cloud computing has various security mechanisms in place, such as user authorization, only authorized individuals may access or share Cloud structures can be applied to permit statistics sharing capabilities, that could deliver numerous benefits to the user.

There is currently pressure for IT companies to improve their statistics sharing efforts. Cloud computing technologies offer the potential to improve constructivist and cooperative learning instructional approaches. Cloud-based application capabilities such as file sharing and online publishing are encouraging education departments across the country to adopt these technologies.

There is a vast diversity of instructional technology tools available today. These tools have altered how teachers educate and students learn. Online collaboration tools are among the various educational technology applications that are gaining popularity. Online collaboration tools are web-based applications that enable people to work together online on tasks such as chatting, file sharing, and evaluation. However, when new instructional technology is introduced into the classroom, its impacts must be assessed, as this is a necessary component of evaluation. Having the instrument is not enough; it must be evaluated in order to be more successful.

## 2.2 Related Studies

2.2.1 **Foreign Setting**

2.2.1.1 Cloud Storage

Organizations' computer and storage requirements are expanding in tandem with technological improvements. Since the process of setting up a storage system is so high, the "on demand storage" notion has emerged. However, seeing as activities are conducted via cloud over the internet, this results in little control over computer resources. Managing storage services necessitates more affordable, scalable, and customizable solutions.

According to a study that is based on Amity University, Gurugram, Haryana, India, the cost of computing has gone drastically low as we can rent the storage space and resources of a supercomputer at very low cost. For the maximum usability, Using drag and drop facility, the data can be stored and pulled between the local PC and cloud any number of times. Whether it is a photo or a data file or any other file format, saying of files will become very easy with just few clicks. Work can be easily done in collaboration with other people sitting miles away without any issues. In managing disaster and recovery of data, which is the most powerful and at the same time most vulnerable resource at this point in time. If stolen, my lead to irrecoverable loss in income, productivity, customers, reputation and thus leads to loss in business.

2.2.1.2 Cloud Computing

Institutions have embraced cloud computing because of its dynamism, scalability, and availability of resources, allowing users to use it virtually. Cloud computing, according to another source, is a new IT technology that is changing the way the internet and information systems operate around the world4. The original idea behind cloud computing was to make software and hardware resources available to both businesses and individuals.

Cloud computing, as the next phase of data center, includes virtual services such as hardware, user interface, and logic applications, as well as a number of QoS (Quality of Service) options based on the customer's needs. The internet6 can help distribute these services. Cloud computing may be the next generation of data storage for businesses. Data management software is one of the cloud computing services. This program will lower the company's hardware maintenance costs in the office.

Cloud computing is a group of configurable computer networks (such as, networks, servers, storage, applications, and services) that may be accessed as an on-demand network with little effort or contact from service providers13,11. Cloud computing, according to another article, is "virtual and distributed computing through the internet using web and software services 14. The utilization of computing resources as a service across a network17 is also referred to as cloud computing. Tenants should be responsible for paying for services they use. The author might conclude that cloud computing is on-demand computing with services that can be accessible via the internet based on the aforementioned definitions.

Cloud computing is a type of computing that is very scalable and makes use of virtualized resources that users can share. Users are not required to have any prior understanding of the services. A user on the Internet can communicate with multiple servers at once, and these servers can share information (Hayes, 2008). Cloud computing is currently one of the newest technology developments (broadband internet, rapid connections, and virtualization), and it is expected to have a big impact on the teaching and learning environment. Cloud computing is an emerging application platform and aims to share data, calculations, and services among users. The methods to model it with the challenges like user interface, task distribution and coordination issues are explained and evaluated in (Lijun, Chan, & Tse,2008).

Grossman et al., (2009) created a cloud-based infrastructure that was optimized for high-performance wide-area networks and supported the necessary data mining applications. Cloud services has accelerated the adoption of various technological innovations in academia, and its facilities and resources can now be accessed on–demand by colleges. Praveena and Betsy (2009) provided a thorough introduction to the use of cloud computing in universities. Delic and Riley (2009) evaluated the current state of Enterprise Knowledge Management and how it could be transformed into a more global, dependable, and efficient infrastructure, namely cloud computing. They discussed architectural technologies and their applications.

The fundamental characteristics of cloud computing are discussed and linked to the original "Grid Computing" technology (Aymerich, Fenu & Surcis, 2008). They launched innovative services that will replace a variety of current computational resources. In this light, they believe grid computing will play a critical role in determining how cloud services will be delivered. SaaS, or software as a service, is a software deployment service given by Internet Service Providers (ISPs) and carrier firms that is projected to modify the current system architecture of corporations and is thus considered as another network society innovation (Hirata et a1, 2008).

Cloud Computing in the Classroom Users/customers can access computational and storage resources via the Cloud. It functions as a demand-based service. Cloud computing is a new business model based on modern technologies such as virtualization, software as a service, and high-speed internet. New applications and elastic scalability with increased computing parameters piqued people's curiosity recently. As a result, these good impacts have transferred to outsourcing not only equipment setup, but also ongoing IT management of resources (Open Grid Forum, 2009).

2.2.1.3 Chat

Users must frequently be asked if they require assistance. This is more challenging with online users since in-person cues cannot be utilized to engage them when they require help. This problem is solved with proactive chat widgets, which slide out onto the screen and ask the user for assistance. The necessity for the proactive chat widget was also evident, since EZproxy statistics indicated that just 1% of online students who used the library's services sought assistance through chat. The success and challenges of implementing a proactive chat widget on the library's Web site, catalog, and databases will be discussed in this article, as well as a review of proactive chat software, collaboration among library departments to test and launch the widget, chat transcript analysis for coverage and training, and the roles of the various departments staffing the chat service.

As online social networks grow in popularity, a new type of small-scale platform, the online chat group, emerges. On online social networks, an online chat group is an extension of a social group. As a result, they are comparable. The scale of an online chat group, for example, corresponds to "Dunbar's Number"; it collects individuals by area, interest, or work, and there is some social contact or social link among group members.

Group efficacy, which has been examined in the literatures, is a fundamental subject of group research. For example, Reagan and Zuckerman's research suggested that high network density increases group performance by increasing cooperation and trust among members; Oh et al. looked at the effects of group closure, bridge links, and current and previous relationships on social capital. They claimed that increased social capital in a group leads to increased group effectiveness. Dong et al. observed that greater turn-taking rates and backchannel rates boost group effectiveness, but higher turn competition rates and unequal turn transferring diminish group effectiveness in the realistic interaction group, comparable to the online chat group. Obviously, the criteria are as diverse as the types of organizations.

There are also differences between online chat rooms and other forms of groups. Online chat groups, unlike groups in the actual offline world, are arranged in the virtual world, rather than sitting face-to-face. The following are some of the benefits. Members from varied backgrounds can converse without being limited by geography. It is simple to exchange information. It makes archiving and recovering old discussions much easier. Chats are open to the public, and everyone has an equal opportunity to speak. Furthermore, suppliers of online chat group services are worried about the number of active users since more active people equals more advertising money. Information acquisition is an issue for group owners and members, and its relevance for members of online groups has been highlighted in literatures. Finally, the online chat groups we're looking at are synchronous, whereas much previous research on online groups, such as Usenet newsgroups, Yahoo groups, Google groups, and so on, has focused on asynchronous communication.

In general, these research construct algorithms or systems using approaches based on user-generated data and data mining techniques. They serve as the foundation for application. They do not, however, explicitly expose any associated rules or features of the online chat group's efficacy. As a result, this article investigates the efficiency of online chat groups in the following manner. We begin by providing an overview of the online chat group and making certain assumptions. Second, we calculate the number of active members and the efficiency with which group members get information. Finally, we do a numerical experiment to see how the linked factors affect the online chat group.

The earliest synchronous CMC tools for language learning and teaching were chat systems. Chat is pervasive in the learners' surroundings outside of the educational setting as instant messaging (IM), a medium that is employed by certain CMCL educators (Godwin-Jones, 2005). Chat and IM are useful for investigating textual interaction since they can simply be documented, providing researchers with quick transcripts. Despite their distinctions, we will consider them as one for the purposes of this chapter.

Chat is written, but the synchronization of the language means that it is closer to oral discourse, or, as Weininger and Shiel put it, "towards the "proximate" end of a continuum spanning from language of closeness to language of distance" (2003: 329). As a result, it has been argued that synchronous chat is an effective platform for practicing spoken contact in situations when acquisition is the primary aim. As a result, various research on chatting have been conducted since the mid-1990s to examine the usefulness of synchronous textual online communication for negotiation (see e.g., Chun, 1994; Ortega, 1997; Blake, 2000, see in this chapter; Pellettieri, 2000; Lee, 2002b; Payne and Whitney, 2002; Tudini, 2003).

Another major focus of synchronous chat research has been on learner co-construction of meaning (Swaffar et al., 1998; Belz, 2001). Researchers like Thorne (2003; see this chapter) have lately begun to focus on the mediating function of synchronous communication technologies and the impact this has on learner engagement.

Virtual learning communities are developed in web-based education to facilitate engagement and achieve specific educational aims, with CMC technology supporting the majority of the contact. Because the sociocultural constructivist approach holds that knowledge is built through dialogic contact, little is known about the influence of online synchronous (chat) interaction on knowledge formation, but online asynchronous interaction has been studied more extensively. Furthermore, instructional Computer-Mediated Discourse (CMD) analytical frameworks, which are primarily built for asynchronous talks, are often less sensitive to chat interactions. The influence of chat interaction on supporting knowledge production processes in two tutorial groups is investigated in this article. The discourse analysis demonstrated that participants are involved in meaning negotiation, which leads to the creation of new knowledge. The findings of the study revealed the availability of scaffolding and the appropriation of common understandings, both of which are important aspects of the knowledge production process. These findings may be used to inform the pedagogical design of online synchronous instructional environments that promote learning through virtual learning communities' dialogues.

2.2.1.4 File Management

This research discusses how file management and organization will improve with the use of fuzzy logic approach. Combining the fuzzy logic approach and file management will help the maintenance and organization of the files on the computer. This system will allow the users to stored, organize, and manage files effectively. The researchers discovered that applying the fuzzy logic approach in file management gives an intelligent way to perform file operations on a large number of files.

The researchers examine the effect of a file management system in the University Libraries in South East Zone of Nigeria. It was suggested that librarians keep their file management up to date to be able to locate the files easily. File management is essential because files should be organized and stored properly and have backups. Having file management in the library will help the librarians to view, locate, and deliver the service effectively.

Electronic files are stored in a document management system to organize, locate, and secured documents. In Turkey, the implementation of an electronic document management system (EDMS) is not required in government agencies but, the government is still considering making this approach mandatory in order to save money and speed up document distribution. The findings and outcomes of this study contribute to the usability research of EDMS.

Securing the validity of academic records is essential in any educational institution. It is important to have security measures to ensure the authenticity of the documents. In this case, a document management system is the best way to secure and manage the documents. Researchers examines the use of a document management system in allowing the users to have authenticated keys and certificates in storing their documents. A document management system with a digital signing feature was used to implement the system. The authenticated keys and certificates of a user was created to submit in the system. To complete the process, the users must enter a password for the protection. This system was tested for functionality and usability in managing electronic files, and it shows that the system is recognized as valid to manage electronic files effectively.

According to research, developing a change management tool is the best method to deal with employee opposition to the new system. This consists of numerous critical parts, including the performance management process, which ensures that the required talents are used. To ensure that the hurdle of resistance is overcome, it is also necessary to give enough training, as well as an efficient communication and positive reinforcement plan. Furthermore, today's requirements necessitate that database management system specialists completely comprehend the shift to a multi-application database platform. Database design and software development must be done in such a way that the work process runs smoothly.

In companies, document management is vital. According to recent studies, locating existing documents or information accounts for roughly 10% of the average worker's burden. Finding the most recent version of a document might take a long time and effort. Worse, several "last" copies of the same document may exist, and someone may assemble them into a single, genuinely last version of that document. This wastes precious resources, not to mention the fact that such documents are prone to errors.

2.2.1.5 File Sharing

According to Jonas Andersson Schwarz is a Lecturer in the Department of Culture and Communication at Södertörn University, Sweden (2013), "sharing" has developed into one in every of our virtual, networked age's maximum revealing pleasures. However, as virtual literacy involves all creativity and deviance, it allows for sharing and copying in quite disparate ways. Nowadays, sharing manifests itself in approaches which are each out of control and uncompromising, in addition to compliant and business-friendly.

According to a study conducted at the University of Nebraska - Lincoln titled Awareness and Usage of Cloud Computing Application among LIS Professionals: A Case Study of 17 Indian University Libraries, approximately 85. 7 percent of respondents from all university libraries studied are familiar with the term cloud computing. The vast majority of responders exclusively use cloud computing for personal reasons. Cloud computing is increasingly being used for professional applications, such as collaborating with library users and providing reference services to users. Cloud computing is a new technology that allows them to avoid hosting many servers and equipment locally and regularly manage hardware failures, software failures, updates and compatibility issues. Cloud computing has the potential to streamline procedures while also saving time and money.

**2.2.2 Local Setting**

2.2.2.1 Cloud Storage

Students in general may gain from these three benefits since schools offer a large number of assignments, which they must accomplish alone or with other classmates who may live far away. As a result, cloud storage allows them to complete several assignments while away from school and each other.

Significant and positive performance expectancy indicates that students are more inclined to adopt a cloud storage system if they think their homework, whether individual or group, can be handled and done successfully and efficiently using cloud storage. Furthermore, a large and positive social effect shows that because students' classmates and professors utilize cloud storage and expect them to do so as well, they are more inclined to use it. They may effortlessly save, access, retrieve, and exchange documents online using the system, allowing them to maintain smooth working routines and connections.

As a result, it is advised that the University keep its present membership to one of the cloud storage solutions. This allows the community to become more productive by providing an easy and effective means to offer lectures, share academic papers, and collaborate with groups at any time and from any location. Furthermore, active training for all members of the community should be implemented so that the majority of members would embrace the usage and become brand ambassadors, persuading others who are not yet inclined to use. This manner, organizations may encourage everyone to utilize the system, enhancing productivity while also maximizing the fixed cost of a cloud storage system subscription.

2.2.2.2 File Management

A file management system based on Android was developed by SPAMAST - Digos Campus to store and organize electronic documents. This system also serves as a means of communication. The users will receive notification of the messages through the notification features. A file management system is used to store, secure, locate, and manage files in the system.

The electronic document management system (EDMS) is used to store, locate, and recover electronic documents in the system. Users can use a document management system to store their documents and make them easier to find. The users can manage their electronic file with this system effectively. One of the features of this system is security, which ensures a user's eligibility to access their files.

In most organizations, a document is essential. It is used as proof in transactions and as a record of written contracts. It exists to assure the proper execution of specified duties and procedures. File tracking, transfer, and monitoring are all part of these roles and procedures. It becomes a problem if the task is not adequately managed. Managing records, for example, necessitates concentration. To maintain records in order, important documents must be watched and verified. Retrieval of these papers is done repeatedly if they are lost or misplaced owing to an error in handling. These vital records must be closely checked, especially in large universities.

A document can be authored, printed, or stored electronically. Information is represented graphically. It's been used by a variety of people. Various corporations, governments, institutions, hospitals, and other entities that require knowledge to advance. Documents are now available in a variety of formats, including text, image, video, and recordings, thanks to the advent of computer and other electronic technology. The use of a computer system and software to store, organize, and track electronic documents and electronic images of paper-based information collected via a document scanner is known as document management systems (DMS).

Chapter III

# METHODOLOGY

## 3.1 Purpose Statement

The purpose of this study is to give students who have difficulty keeping documents with an easily accessible cloud storage system. Files such as papers, PDFs, PowerPoint presentations, video recordings, and other sorts of files are difficult to keep on a device with a limited amount of storage space. The goal of the research is to develop a cloud-based storage system that can store, exchange, and organize files in a way that is more user-friendly for students.

## 3.2 Research Design

Diagram

Description automatically generated

Diagram

Description automatically generated

Developmental studies will be the research design that the researchers will use. This research is focused on the development of cloud-based storage that will be utilized by students to manage their educational materials. It seeks to determine whether the application is easy to use and effective, as well as to identify any functions that should be added or improved. The researchers will conduct their study on Diversified Online Chat and Storage for Students (DOCSS) using the Project (Curriculum Design). It is used to create and design applications that address specific issues. This enables students to keep and manage their files and documents without depleting their device's storage space.

## 3.3 Population, Sampling Size and Sampling Techniques

The respondents of the study are the students and professors from Technological University of the Philippines - Taguig Campus specifically the students and professors under the Basic Arts and Science Department. In addition, the researchers will conduct a survey to the IT experts. The study employed a proportional sampling technique for it to draw a sample wherein in each sampling unit had a fixed number of respondents.

### 3.3.1 Determining Sample Size

Text

Description automatically generatedThe researchers used this formula to get the sample size:

Where:

z ɑ/22 = z-score

p = Standard Deviation

MOE = Margin of Error

The researchers chose a 95% confidence level which corresponds to a z-score of 1.96, 0.25 as our standard deviation and a margin of error of ± 5% that is equivalent to 0.05. By using the formula and the given, the researchers get a total of 96 respondents that are needed and becomes the sample size.

Table 1 contains the respondents that is assigned for sampling, the BTVTE students under Technological University of the Philippines - Taguig.

**Table 3.3.1 Summary of Respondents in TUP – Taguig**

|  |  |  |
| --- | --- | --- |
| **RESPONDENTS** | **FREQUENCY** | **SAMPLE** |
| BTVTE 1ST Year | 131 | 23 |
| BTVTE 1ST Year | 129 | 23 |
| BTVTE 1ST Year | 123 | 22 |
| BTVTE 1ST Year | 115 | 22 |
| BASD Professors | 10 | 3 |
| IT Experts | 5 | 3 |
| **Total** | 513 | 96 |

## 3.4 Data Gathering Procedure

The following are the steps taken by the researchers in gathering the data for this study. The researcher will seek first for the approval of the Department Head of Basic Arts and Sciences Department (BASD), to conduct a study and to distribute questionnaires. After the approval, a request letter for conducting a study and for gathering the needed data of the study with an inclusive dates and time and to the selected locale of the study will be presented to the Department Head of BASD. The instruments and questionnaires will be checked first for reliability and validity before it will be distributed.

The researcher’s respondents will be informed about the nature of the study to ensure their freedom of choice and to provide an avenue for voluntarily consent or to decline to participate in the study. The confidentiality of the respondent’s response will be secured by the researchers. The respondents will be asked to answer the survey/questionnaires only for their free time and will be given enough time in answering and they are permitted to ask questions and clarifications regarding to the research topic questions. Once the respondents done answering, the researcher will collect and compile the results for the analysis and interpretation.

## 3.5 Data Analysis Procedure

This research paper aims to address the issue of continuously needing of extra storage for documents and files that are produced by the online classes and the convenience of sharing files. The researchers will conduct surveys to discover the effectivity and usability of cloud storage to students.

The procedure used in this paper are surveys and questionnaires. The instruments will be the one that will help researchers gather the information that is needed in the research topic. After gathering the data, the researchers will analyze and summarize the main points that are collected. In line with this, the researchers will conclude whether the results met the idea proposed at the beginning of the research.

### 3.5.1 Likert Scale

In order to collect data from the respondents, the researcher utilized a questionnaire. The information recorded was organized using a quantitative method and expressed using a Likert scale, which will measure the number of respondents to the questionnaire and evaluate the participants' expectation. The questionnaire results will be identified in five categories with data points and analyzed using the Likert scale:

**Table 3.5.1. Likert Scale**

|  |  |  |
| --- | --- | --- |
| **Weights** | **Limit** | **Verbal Interpretations** |
| 1 | 1.00 – 1.50 | Strongly Agree |
| 2 | 1.51 – 2.50 | Agree |
| 3 | 2.51 – 3.50 | Neutral |
| 4 | 3.51 – 4.50 | Disagree |
| 5 | 4.51 – 5.00 | Strongly Disagree |

### 3.5.2 Frequency

The researchers will use the formula of frequency to obtain the number of participants who answered the survey questionnaire.

F / N x 100

Where:

F = frequency

N = total number of responses

### 3.5.3 Weighted Mean

The researchers will use the following formula:

Where:

x = each result

x̄ = mean

n = total number

### 3.5.4 Correlation Coefficient

Table

Description automatically generatedThe researchers will use correlation coefficient as a scale for understanding the value of a relation between two variables.

Table 3.5.4 Correlation Coefficient

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# APPENDIX A: GANTT CHART

Chart

Description automatically generated with medium confidence**Figure 1. Gantt Chart for Chapter 1**

**Graphical user interface, application

Description automatically generatedFigure 2. Gantt Chart for Chapter 2**

**Figure 3. Gantt Chart for Chapter 3**

# APPENDIX B: SURVEY / RESEARCH INSTRUMENT

**Part I. Demographic Profile**

**Direction:** Fill out the form below honestly.

**Name (Optional):** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Put check on the circle (whether you are a student, teacher, or IT Expert.)

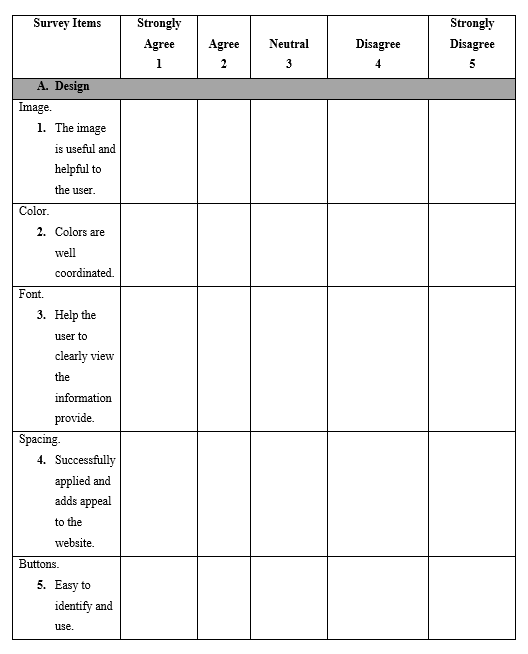
* Student **Year & Section:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Teacher/Professor
* IT Expert

**Part II. Survey Questionnaire:**

1. What can you say about the features of Diversified Online Chat and Storage for Students (DOCSS)?

2. What are the possible improvements and additions in DOCSS?

3. What features in the future you think that DOCSS must have?

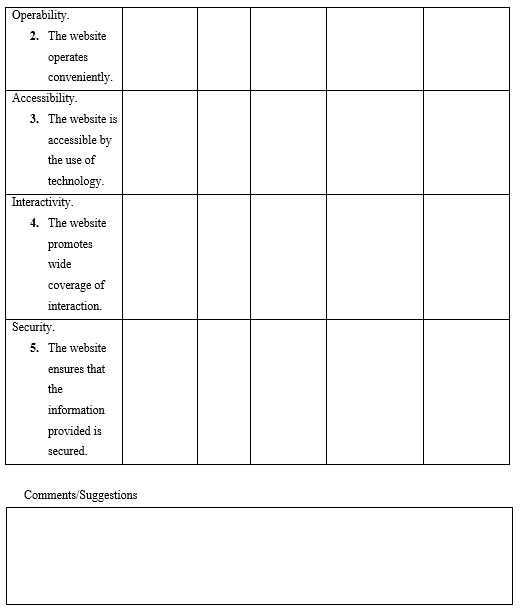
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