| University of Petra |  |  |
|---|---|---|
| Faculty of Information Technology | | كلية تكنولوجيا المعلومات |

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# Table of Contents

# Chapter 1: Project Initiation

## 1.1 Introduction

E-Learning integration into the educational process has always been a slow and problematic procedure in most countries, and government officials usually stated that they are not ready for this drastic switch at the moment, but as the pandemic began and sectors started moving to online platforms the switch was obligatory.

This project will aim to solve one of the problems of the current E-Learning process, which is students having to use many different applications and programs throughout their educational process, which results in them feeling lost and overwhelmed by the number of new interfaces that they will have to deal with daily.

'It is not enough for the learners to recognize how to utilize the mobile devices, software, various apparatuses that exist at a given time during their study period rather they ought to be able to adapt to new digital settings.' (Hoq, 2020)

### 1.1.1 Problem Definition

A study states that 'Lack of experience with computers can be a major hindrance for learning especially for students who are entirely new to computers whereas computer confidence accounts for much of the predictive power of good achievements.' (Andersson, 2009).

The rush implementation of E-Learning especially in developing countries that still did not have a stable and reliable E-Learning platform meant that they had to rely on many different platforms, which are not necessarily education oriented.

Students who are not used to dealing with computers in general needed a longer period to get accustomed to the new learning environment, which naturally affected their grades and education overall.

A study state that different countries had different approaches to dealing with the pandemic (Reimers, 2020), especially when lockdown procedures had to be taken quickly and surprisingly which left many students without any reliable source of education and having to use unprecedented methods to name a few:

- Watching educational material broadcasted through television.
- Having to rely on raw educational material and self-study.
- Or having no education at all for a while.

We can understand that these procedures were used as a quick response to try and maintain public safety and health, but we think it is not acceptable to use the same methods a year after the pandemic started.

### 1.1.2 Project Objectives

**Objective 1:** Provide the students with several useful functions.

**Objective 2:** Introduce a simple, compact interface to deal with.

**Objective 3:** Decrease the learning curve for students not accustomed to computers.

**Objective 4:** Increase student productivity.

**Objective 5:** Easier linking between students.

## 1.2 Current and existing systems

### 1.2.1 Current Systems

**University of Petra- Jordan**

The University of Petra currently uses two different Learning Management Systems (LMS) across its different faculties, which are Moodle Learning Management system and Blackboard, in addition to multiple mainstream platforms that are not education-oriented used by students and teachers to communicate.

*Figure 1 - University of Petra Logo*

Drawbacks:

- A large number of interfaces need a lot of time to learn and master.
- Lack of new and up-to-date features and functions.
- Weak and unused communication system.

*Figure 2 - Mindflash Logo*

### 1.2.2 Existing System

**Mindflash**

Mindflash is a Learning Management System that provides a simple and easy-to-use interface for both teachers and learners, which helps elevate the learning experience for both parties.

Mindflash optimizes several existing materials including PDF Files, voice-overs, Word, and PowerPoint documents that keep the student engaged and on track with his/her educational progress and limiting reliance on other platforms which could affect the overall learning experience.

Mindflash creators state that ‘it’s vital to create a learning experience that is both engaging and mobile. Mindflash has the tools to create, manage and distribute e-learning courses with ease.’ (Anon., 2021).

Drawbacks:

- Mindflash functions and features are more focused on employee training.
- The packages provided may lack key features for students.
- Lack of rewarding system.

**SkyPrep**

Skyprep is an award-winning Learning Management System that is known for simple and easy to use interface which helps streamline training courses and programs, it is also known for its exceptional customer support service that is always open for suggestions and recommendations from their customers.

*Figure 3 - SkyPrep Logo*

One of SkyPrep’s customer's comments ‘I have 80 employees working in 12 states. SkyPrep allows me to keep them all trained and compliant.’ (W., 2021)

Drawbacks

- Similar to Mindflash, SkyPrep functions and features are more focused on employee training courses and material rather than students.

## 1.3 Literature Review

### 1.3.1 Introduction

“E-Learning refers to the use of computer network technology, primarily over or through the internet, to deliver information and instructions to individuals.” (Kumar Basak, 2018)

E-Learning has been a term that is used when describing the future of education, the ability to use our great technological advancements in the fields of Information and Communication Technology (ICT) to provide the students with an educational experience that allows them to benefit from various resources and negating most of the drawbacks associated with conventional learning methods.

Developed countries that could provide the technological infrastructure needed to implement the different functions and features of E-Learning, such as fast and reliable internet connection, computers with sufficient processing power needed to carry out the tasks associated with E-Learning, have been able to enjoy the benefits of switching away from conventional learning methods, whereas developing countries always feared to make this switch because they are not capable of dealing with the costly construction of advanced technological infrastructure, in addition to their inability to provide the needed computer skills training for most of its citizens.

### 1.3.2 The pandemic effects

#### *1.3.2.1 General effects*

A pandemic is defined as "an epidemic occurring worldwide, or over a very wide area crossing international boundaries and usually affecting a large number of people." (Kelly, 2011) The pandemic had its effect on almost every side of human life, ranging from economic effects, where the travel industry had to be practically shut down to try and flatten the curve of confirmed cases. One study state that "the business travel sector would lose $820 billion in revenue due to the coronavirus pandemic." (Ozili, 2020)

The pandemic effects would also spillover and affect the person's mental health and psychological state. Studies show that in the time of a pandemic the possibility of having

mental illnesses such as Anxiety, Depression, or Indignation generally increases as the following table presents:

| | T-Before | | T-After | | t | df | *p* |
|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | | | |
| Negative emotions | | | | | | | |
| Anxiety | 11.69 | 4.61 | 12.79 | 4.66 | −35.962 | 17,747 | 0.000 *** |
| Depression | 14.87 | 4.81 | 15.27 | 5.08 | −10.717 | 17,747 | 0.000 *** |
| Indignation | 1.83 | 0.43 | 1.86 | 0.45 | −11.415 | 17,747 | 0.000 *** |
| Positive emotions | | | | | | | |
| Oxford happiness | 89.91 | 9.48 | 89.71 | 8.84 | 3.120 | 17,747 | 0.002 ** |

*Figure 4 - The pandemic mental effects (Li, 2020)*

We think that economic issues resulted from the pandemic could be less important especially when being compared to the mental issues that could happen, it is important to keep track of mental health status, making sure that people are aware of the negative effects of loneliness and anxiety and raising awareness about these kinds of problems that could leave an ever-lasting effect on a human being even long after the pandemic is over.

#### *1.3.2.2 Effects on Education*

One of the sectors that are greatly affected is the education sector where most countries had to move most educational activities to online platforms, as an attempt to enforce social distancing measures and to curb the curve of active cases, but that also meant a downgrade in quality of the educational service being provided.

Studies indicate that moving to Online learning had a much greater effect on students than what initially appears on the surface, not only did the change affect the academic performance of most students, but also the lack of interaction between students in a class or a campus environment greatly lowered their self-esteem, social skills and even resulted in an increase in

anxiety cases between students. Research suggests that “24.9% of students have experienced anxiety because of this COVID-19 outbreak” (Pragholapati, 2020).

This pandemic did not only lower the quality of learning for students, but in some cases, it got their education to a complete stop, students especially those living in developing countries or rural did not have the needed equipment or skills needed to carry out their education using online platforms, or in other cases, these platforms were so weak and fragile they could not handle the traffic coming their way, the following figure illustrates that contingency plans were not always placed.

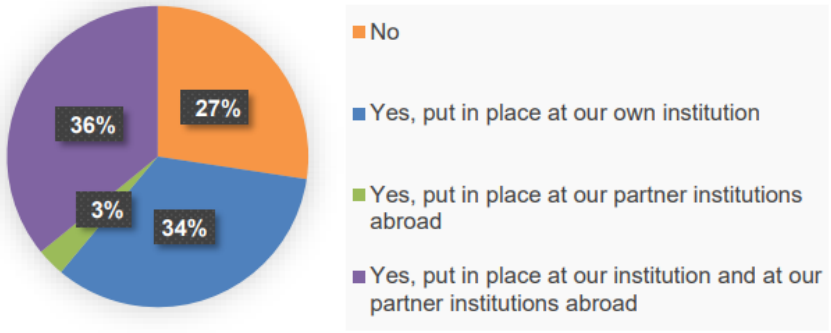


*Figure 5 - Contingency plans (Marinoni, 2020)*

### 1.3.3 Worldwide Response

Governments all around the world have implemented various types of response plans, aiming to deal with the outbreak, these plans changed as new information and research got more and more available, but they mainly revolved around three main aspects:

- Healthcare response.
- Political response.
- Financial response.

Different plans and approaches resulted in different outcomes and numbers of active cases, following we will present some successful examples of how some countries managed to deal with the outbreak:

- **Taiwan:** Taiwan's approach revolved around early and aggressive procedures, even though it has borders with China the epicenter of the outbreak, a strict border shutting policy helped the government keep track of new cases and limiting the spread of the virus locally.

- **Canada:** Canada is a good example of how having a great healthcare program could help curb the number of confirmed cases, even though their economy was majorly affected by lockdowns, their social safety nets meant that Canadian citizens were not in financial danger.

- **Iceland:** This island benefited from its small size and population, which meant that implementing a simple plan of testing and tracking could keep the number of cases under control, and lockdown measures got relieved as life started going back to normal.

### 1.3.4 Education Sector Response

The changes in the educational sector around the world mainly revolved around major and complete shutdowns of schools, universities, and other educational institutes, the shutdown periods varied from a week or two to indefinite periods in other more severe cases.

Research state that "When asked what has the government or network of schools done to date to support the ongoing academic instruction of students, a large percentage indicate 'nothing'." (Reimers, 2020), the following figure represents the educational priorities in response to the crisis:

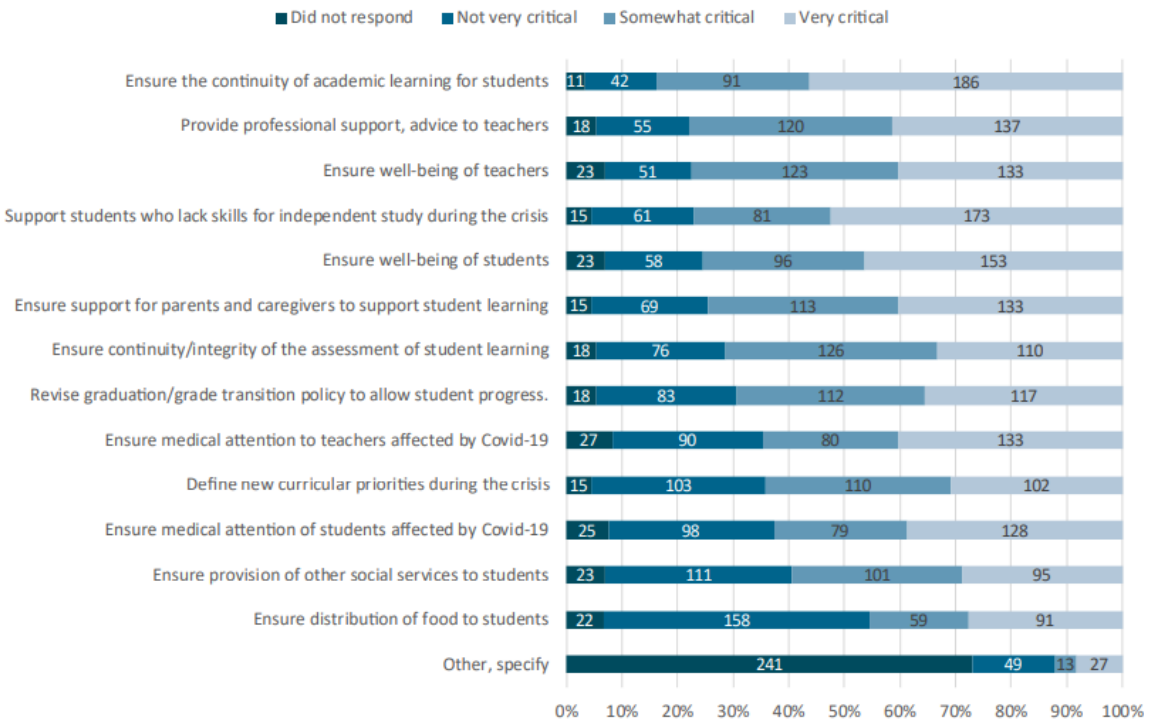


*Figure 6 - Educational Response priorities (Reimers, 2020)*

### 1.3.5 Conclusion

As the pandemic is still occurring and it's largely affecting our life, it is not acceptable that the student education quality is decreasing as new plans are being tested, leaving the students lost between the plethora of educational platforms being provided as an emergency response to the crisis, which could lead to further damage to the society in the future.

We should aim to help the students in these times and provide them with a simple and intriguing learning process that would increase their focus on education rather than adding another problem that they would have to deal with daily and unfortunately, possibly for years ahead.

The pandemic should not be used as an excuse rather it should be a motive for us as a humanity to better ourselves in all the different sides of life and especially in a vital sector such as education.

## 1.4 Stakeholder List

| Stakeholder | Interest | Importance |
|---|---|---|
| Dr. Ahmad Shubita | Team supervisor and guide of the development process | **High** |
| Wael Khaled | Programmer / Team member | **High** |
| Mohammad Alfaqeeh | Requirement gathering and analysis / Team member | **High** |
| Google's Firebase | Used as a back end for the chatting function. | **High** |
| Students (Users) | The people who will be using the application | **High** |

## 1.5 Proposed Scope & Process Model

### *1.5.1 Proposed Scope*

This project will be android based and will be aiming to provide the student with a utility package that will include a variety of functions that could be helpful especially nowadays, it will include a chatting function built using Google's Firebase as a back end in addition to a PDF Scanner and converter which will be implemented using the OpenCV Image Processing library, as well as an organizer that would help the student keep track of his/her exams or submission dates.

### *1.5.2 Process Model*

In this project, we will be using the incremental process model.

The incremental model is a software development process model where the processes are grouped in small recurring modules called increments, and each increment refines and eliminates some of the issues found in the previous one until reaching a version that could be deployed and used.

Our choice was made based on the advantages that this process model can offer, mainly rapid feedback which allows us to identify and fix the issues on time, especially in the tight schedule that we are dealing with.

### *1.5.3 Project excluded and Project constraints*

This application will only be implemented on Android-based phones, due to financial and time constraints that limit us from developing a version for IOS users.

The application will not include any official teaching or educational materials, because it may require governmental approvals and further paperwork, which would affect our tight schedule negatively.

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