



Rajkiya Engineering College Banda

Project Report on

“Unveiling the Virtual Classroom: An In-depth Analysis of the Online Education System”

Submitted by

Dr. Pooja Singh
Assistant Professor
Rajkiya Engineering College Banda
Atarra Banda, 210201

Under

Virtual Faculty Build-a-thon 2023

Organized by

IBM in collaboration with AICTE, delivered by Smartbridge



Table of Contents

Introduction 2

1.1 Overview 2

1.2 PURPOSE 2

Literature Survey..... 2

Theoretical Analysis 3

3.1 Block Diagram 3

Experimental investigations..... 3

Flow Chart 4

Result 4

Advantages & Disadvantages..... 4

Applications..... 5

Conclusion..... 5

Future scope 5

Bibliography 5

Appendix 5

Source Code 5

1. Introduction

1.1 Overview

The field of education is not untouched by globalisation. Awareness about a variety of thrust areas in different aspects of education has eventually increased participation of several students. The Distance learning was a solution for achieving the demand of education on ground of restriction of location. It also emerged as a motivator for online learning. Many MOOC courses were developed dealing with areas of interest in different topics which supported multidisciplinary research. These advantages of online classes were limited up to the pandemic COVID -19 hit the world. During the pandemic Online classes were the only tool to serve the purpose of education. A vast number of technologies and platforms were developed to support the transition from traditional classroom learning to online learning. Factors like training of teachers, connectivity, student's mental well-being, etc. came into picture as barriers. But, with a great effort of teachers, network providers and government soon the problems were overcome. Today, online education is a part of life of every student irrespective of level of education, economic status or location.

1.2 Purpose

This project aims to delve deep into the various aspects of online education, examining its strengths, weaknesses, opportunities, and challenges. The outcomes of this project will provide valuable insights for educational institutions, policymakers, and online learning platforms to enhance the effectiveness and accessibility of online education. This analysis of the online education system aims to contribute to the ongoing dialogue on the future of education and help shape a more inclusive, engaging, and effective learning environment in the digital age.

Literature Survey

2.1 Existing Problem

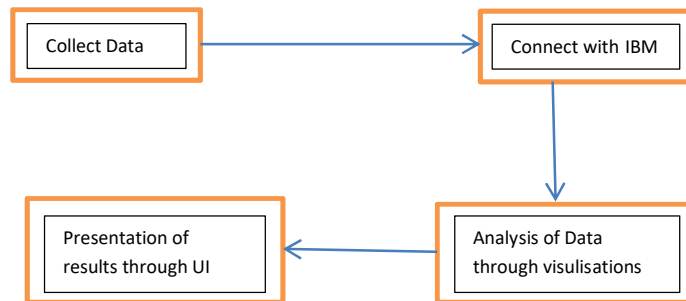
A comparison between traditional classroom and virtual class room reveals that both have their advantages and disadvantages. During the period of pandemic much research was done on barriers for e-learning, cost effectiveness, evaluation strategy etc. For details see [1]. Based on these researches, technologies for virtual classrooms were developed and modified. Google classroom, Zoom, Ted Ed are among some platforms that benefitted from this revolution. An analysis depicting the benefits that the end users are receiving through this revolution is necessary at this stage. Also, the factors that might influence level of satisfaction with online classes should be identified.

2.2 Proposed Solution

Based on the sample data collected, we shall prepare some visualizations using IBM Cognos tool to present some insights about the influencing factors on e-learning.

Theoretical Analysis

3.1 Block Diagram



3.2 Hardware / Software Required

- IBM Cognos Analytics,
- VS Code,
- Python,
- Flask.

3.3 Column description of the database

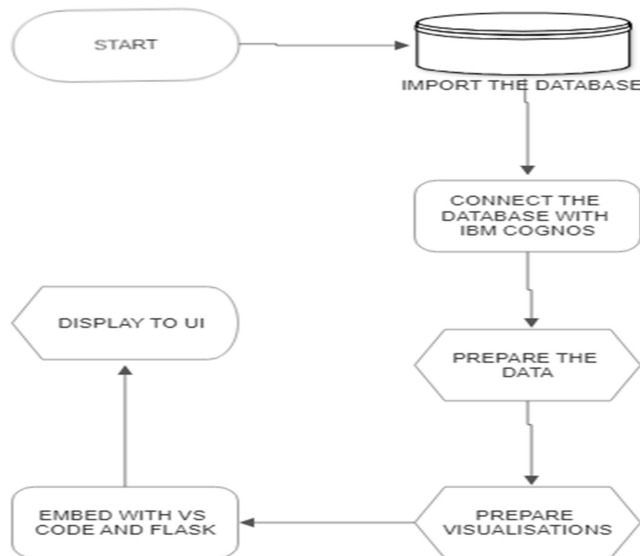
- Gender: (Male /Female)
- Home Location: (Rural or Urban).
- Level of Education : UG, PG or school
- Age : age of the student
- Number of subjects
- Device Type Used : device used to attend the online classes (Mobile, Laptop or Desktop)
- Economic status : (Poor , Middle, Rich)
- Internet facility in your locality: On a scale of 5.
- Are you involved on any sports (Yes/ No)
- Family Size: Numeric value.
- Do elderly people monitor you ?. (Yes/ No)
- Study Time(hours)
- Sleep time (hours)
- Time spent on social media(hours)
- Interested in gaming? Yes/ No
- Have a separate room for studying? (Yes/ No)
- Engaged in group studies? (Yes/ No)
- Average marks scored before pandemic in traditional classroom
- Your interaction in online mode. (On a scale of 5)
- Clearing doubts with faculties online? (On a scale of 5)
- Interested in? (Theory, Practical, Both)
- Performance in online: (On a scale of 10).
- Your level of satisfaction in online education: (Good, Average, Bad).

Experimental investigations

- Level of satisfaction is higher where internet facility is good.

- Level of satisfaction with online education is higher in the age group 17 to 21.
- Level of satisfaction is adequate in all level of education.
- Effect of parents' watch while online class significantly improve performance in comparison to average marks scored before pandemic in traditional class.
- There is almost negligible deviation in performance, interaction and clearing doubts in online mode when students used different type of devices (Laptop, Desktop and mobile) to be online.
- Home locations do not have much effect on performance in online.
- Time spent on social media (Hours) is unusually high when Age (Years) is 9 and 26.
- The data suggests that girls underperform in comparison to boys in online classes.

Flow Chart



Result

Location, Device type used or economic statuses do not have much interference in satisfaction level of students with e-learning. Time spent on social media or monitoring of parents affects performance of students in online classes.

Advantages & Disadvantages

- A wide population especially the age group of 17-21 has accepted the virtual classroom teaching. It suggests that the probability for success of e-courses at graduation level is high.
- The visualizations help us to identify data which may be erroneous.
- Online classes demotivate group studies.

Applications

Industries based on virtual class rooms may take initiative to develop monitored virtual classrooms. As location and economic status do not have much effect on performance in online classes, Government may frame policies to promote e-learning for rural areas. To make the transition from traditional classrooms to virtual classrooms smooth, Government may train and promote teachers to develop learning content suitable for online classes.

Conclusion

The insights obtained from the visualizations created on IBM cognos analytics indicate that the average of performance in online classes is fairly good irrespective of device type used for being online, location, economic status, level of education and network connectivity. Therefore, initiatives to promote e-learning and to make it cost effective may be taken by authorities and technical industries. Online classes demotivate group studies. Therefore, a separate policy is needed to overcome this drawback.

Future scope

Visualizations based on the given data indicates that girls underperform in comparison to boys in online classes, whereas in [2] we can see that generally in traditional classroom studies girls outshine in board results. Therefore, reasons for this significant deviation need to be identified and studied. Policies and activities that encourage group studies while engaged in online classes may be developed and incorporated with virtual classrooms.

Bibliography

- [1] https://www.researchgate.net/publication/331938876_E-learning_A_review_of_literature.
- [2] https://www.researchgate.net/publication/344464600_Boys_versus_Girls_Educational_Performance_in_Educational_Evidences_from_Global_North_and_South

Appendix

Source Code

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="utf-8">
  <meta content="width=device-width, initial-scale=1.0" name="viewport">

  <title>Resi Bootstrap Template - Index</title>
```

```

<meta content="" name="description">
<meta content="" name="keywords">

<!-- Favicons -->
<link href="assets/img/favicon.png" rel="icon">
<link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">

<!-- Google Fonts -->
<link
href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Raleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,600i,700,700i"
rel="stylesheet">

<!-- Vendor CSS Files -->
<link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
<link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
<link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
<link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
<link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
<link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">

<!-- Template Main CSS File -->
<link href="assets/css/style.css" rel="stylesheet">

<!-- =====
* Template Name: Resi
* Updated: Jul 27 2023 with Bootstrap v5.3.1
* Template URL: https://bootstrapmade.com/resi-free-bootstrap-html-template/
* Author: BootstrapMade.com
* License: https://bootstrapmade.com/license/
===== -->
</head>

<body>

<!-- ===== Header ===== -->
<header id="header" class="fixed-top ">
  <div class="container d-flex align-items-center justify-content-between">

    <h1 class="logo"><a href="index.html">Online Education</a></h1>
    <!-- Uncomment below if you prefer to use an image logo -->
    <!-- <a href="index.html" class="logo"></a>-->

  <nav id="navbar" class="navbar">
    <ul>
      <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
      <li><a class="nav-link scrollto" href="#about">Report</a></li>
      <li><a class="nav-link scrollto" href="#services">Dashboard</a></li>
      <li><a class="nav-link scrollto " href="#portfolio">Story</a></li>
    </ul>
  </nav>

```

```

        <li><a class="nav-link scrollto" href="#team">Acknowledgement</a></li>

        <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
    </ul>
    <i class="bi bi-list mobile-nav-toggle"></i>
</nav><!-- .navbar -->

</div>
</header><!-- End Header -->

<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center">

    <div class="container">
        <div class="row">
            <div class="col-lg-6 pt-2 pt-lg-0 order-2 order-lg-1 d-flex flex-column justify-content-center">
                <h1>Unveiling The Virtual Classroom: An In-Depth Analysis Of The Online Education System</h1>
                <ul>
                    <li><i class="ri-check-line"></i> Analysis of online education with reference to availability of network, location etc. </li>
                    <li><i class="ri-check-line"></i> Effect of clearing of doubts, interaction, etc on performace in online</li>
                    <li><i class="ri-check-line"></i> Involvement of factors like time spent on social media, sleep time and study time on online education </li>
                </ul>
                <div class="mt-3">
                    <a href="#about" class="btn-get-started scrollto">Get Started</a>

                </div>
            </div>
            <div class="col-lg-6 order-1 order-lg-2 hero-img">
                
            </div>
        </div>
    </div>

</section><!-- End Hero -->

<main id="main">

    <!-- ===== About Section ===== -->
    <section id="about" class="about">
        <div class="container">
            <div class="section-title">
                <h2>Report</h2>
                <p>Performance in online is studied with reference to economic status, level of study etc.</p>

```



```

    </div>
    <div class="row content">

        <iframe
src="https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FNew%2Breport&closeWindowOnLastView
=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=run&format=HTML&am
p;prompt=false" width="1100" height="1000" frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe>
        </div>

    </div>
</section><!-- End About Section -->

<!-- ===== Why Us Section ===== -->
<section id="why-us" class="why-us">
    <div class="container">

        <div class="row">

            <div class="col-lg-4">
                <div class="box">
                    <span>01</span>
                    <h4>Level of education</h4>
                    <p>Average of Performance in school, graduation and post graduation level on online mode
is adequate</p>
                </div>
            </div>

            <div class="col-lg-4 mt-4 mt-lg-0">
                <div class="box">
                    <span>02</span>
                    <h4>Economic status</h4>
                    <p>Average of Performance for each level of economic status is almost same.</p>
                </div>
            </div>

            <div class="col-lg-4 mt-4 mt-lg-0">
                <div class="box">
                    <span>03</span>
                    <h4>Interest in Theory, Practical or both</h4>
                    <p>Average of Performance of students intrested in theory, practical or both, is almost
same</p>
                </div>
            </div>

        </div>

    </div>
</section><!-- End Why Us Section -->

```

```

<!-- ===== Services Section ===== -->
<section id="services" class="services">
  <div class="container">

    <div class="section-title">
      <h2>Dashboard</h2>
      <p>Visualisations showing effect of different attributes on online education.</p>
    </div>

    <div class="row">
      <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FNew%2Bdashbo
ard&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&
action=view&mode=dashboard&subView=model00000189e93cedb3_00000002" width="1100" height="1000"
frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
      </div>

    </div>
</section><!-- End Services Section -->


<!-- ===== Portfolio Section ===== -->
<section id="portfolio" class="portfolio">
  <div class="container">
    <div class="section-title">
      <h2>Story</h2>

    </div>

    <div class="row">
      <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2FNew%2Bstory&
closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=v
iew&sceneId=model00000189e96b2e18_00000000&sceneTime=0" width="1100" height="800"
frameborder="0" gesture="media" allow="encrypted-media" allowfullscreen=""></iframe>
      </div>

    </div>
</section><!-- End Portfolio Section -->


<!-- ===== Team Section ===== -->
<section id="team" class="team section-bg">
  <div class="container">

    <div class="section-title">
      <h2>Acknowledgement</h2>

```

```
<p>This project is conducted for Faculty buildathon 2023 under the mentorship of Ms. Shivani.</p>
```

```
</div>
```

```
<div class="row">
```

```
<div class="col-lg-3 col-md-6 d-flex align-items-stretch">
```

```
<div class="member">
```

```
<div class="member-img">
```

```

```

```
</div>
```

```
<div class="member-info">
```

```
<h4>IBM Cognos Analytics</h4>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="col-lg-3 col-md-6 d-flex align-items-stretch">
```

```
<div class="member">
```

```
<div class="member-img">
```

```

```

```
</div>
```

```
<div class="member-info">
```

```
<h4>Smart Internz</h4>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="col-lg-3 col-md-6 d-flex align-items-stretch">
```

```
<div class="member">
```

```
<div class="member-img">
```

```

```

```
</div>
```

```
<div class="member-info">
```

```
<h4>Rajkiya Engineering College Banda</h4>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
<div class="col-lg-3 col-md-6 d-flex align-items-stretch">
```

```
<div class="member">
```

```
<div class="member-img">
```

```

```

```

        </div>
        <div class="member-info">
            <h4>Ms. Shivani</h4>

        </div>
    </div>
</div>

</div>

</section><!-- End Team Section -->

<!-- ===== Frequently Asked Questions Section ===== -->
<section id="faq" class="faq">
    <div class="container">

        <div class="section-title">
            <h2>Frequently Asked Questions</h2>
        </div>

        <ul class="faq-list">

            <li>
                <div data-bs-toggle="collapse" class="collapsed question" href="#faq1">What is the source
of data? <i class="bi bi-chevron-down icon-show"></i><i class="bi bi-chevron-up icon-close"></i></div>
                <div id="faq1" class="collapse" data-bs-parent=".faq-list">
                    <p>
                        The data was provided at Smart Internz project workspace.
                    </p>
                </div>
            </li>

            <li>
                <div data-bs-toggle="collapse" href="#faq2" class="collapsed question">What are the tools
used to build this project <i class="bi bi-chevron-down icon-show"></i><i class="bi bi-chevron-up
icon-close"></i></div>
                <div id="faq2" class="collapse" data-bs-parent=".faq-list">
                    <p>IBM Cognos Analytics, VS Code, Python.
                </p>
                </div>
            </li>

        </ul>

    </div>
</section><!-- End Frequently Asked Questions Section -->

```

```

</main><!-- End #main -->

<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-
arrow-up-short"></i></a>

<!-- Vendor JS Files -->
<script src="assets/vendor/purecounter/purecounter_vanilla.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

<!-- Template Main JS File -->
<script src="assets/js/main.js"></script>

</body>

</html>

```

app.py

```

from flask import Flask, render_template

app = Flask(__name__)

@app.route("/")
def home():
    return render_template(r"index.html")

if __name__ == "__main__":
    app.run(debug=False, port=5000)

```