

# A SURVEY ON DEVICES THAT CAN BE USED FOR ONLINE DESCRIPTIVE EXAMINATION AS DIGITAL PAPER

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**Abstract** - *The conduction of University/Board level Examination System is a tedious process involving a lot of work with high risk in managing the question papers and answer scripts. We have heard of question paper getting leaked, answer papers not completed evaluated as the additional sheets were lost in handling the answer bundles and so on. The online examination system with multi choice questions and other forms of one line answers were not appropriate to judge the knowledge of a candidate. For candidates requiring to take up high management post it is required that they have the aptitude, in-depth knowledge and the ability to communicate and command the subordinates so that a proper functioning of the organization takes place. For this an online descriptive examinations is the only way to solve the problems and achieve the required goals. In this paper, we propose the devices that can be used by candidates with ease to answer descriptive type examinations online digitally. This will also be helpful to do digital evaluation or more better automated evaluation that will do a fare and uniform evaluation of all the answer scripts.*

**Key Words:** *Descriptive examination system, Digital examination, Online examination, Digital pens.*

## 1. INTRODUCTION

In the traditional examination system there are a number of problems. It involves a tedious process with a lot of stationery and man power needed in conducting such examination [1]. In general any University or Board examination, the process requires all the examination centres to send a designated person from their centre to the University/Board examination office to collect the stationery required for conducting the examination in their centre. This stationery is allotted based on the candidates appearing for the examination from that

centre. The stationery mainly involves the answer booklets / sheets where the candidates will answer their examinations question papers. These answer booklets / sheets need to be preserved securely and carefully so that they are not misplaced and misused. At the time to examination the room invigilator needs to carry these booklets / sheets to the examination block, distribute these booklets / sheets to the candidates, at the end of the examination collect them carefully and submit it to the examination section of that centre. The examination section of each centre packs these answer booklets / sheets of all the candidates, candidate wise and course wise and submits it to the University / Board examination office or the identified collection centres. This process involves a huge responsibility of the invigilators, examination section personnel and the University / Board personnel handling these answer booklets / sheets because they cannot afford to lose a single answer booklet / sheet. Another important and critical aspect of such examination is distribution of question papers to each of these centres. University / Board of examination identify experts to prepare question paper for each course of the examination. The University / Board select one question paper from a set of question papers prepared by the experts for every course. The selected paper is then printed and distributed to all the examination centres. This distribution process involves a panel of identified members to carry these question paper bundles to each centre and hand over the bundles to the examination centre authority. It is the responsibility of the examination centre authority to keep the question paper in a secure and concealed room till the date and specified time to open the bundle. The problems that arise here is the question paper may be stolen from the secured concealed room or the authority may by mistake open a wrong packet as there will be multiple question paper packets in his custody. To overcome these problems online examination systems were introduced. Such online examination system was for a long time limited to objective type or multi choice questions only. These examination systems were carried out online and sometimes the results were available immediately. Such examinations were not enough to measure the knowledge required by top level management status [2]. It is important for candidates for candidates to express and

analyse information in depth for handling high profile jobs [3]. For these reasons it is must to have online examinations with subjective answers. Different techniques have been suggested for conducting subjective online examinations. One such system involves conducting the examination on a PC on a web browser. The candidates login to the server using a web browser and answer the examination using keyboard and mouse [4]. With tablet PCs becoming popular, tablet based examination system were introduced. Here candidates use a tablet PC and stylus to answer the examination [1]. Answering examination for a three hour duration using these techniques is a difficult task as it is tedious and time consuming to draw diagrams in such systems. So we are here proposing some devices that can be used in writing such examination which are more user friendly in usage.

## 2. RELATED WORK

A. A. Shinde, S. Chokhandre [2] proposed a system that uses a PC with keyboard and mouse to answer the examination. The candidates are provided with an ID and password on registration for the examination. Questions are provided to each candidate in random order through the software on their individual PC. FCK editor is used to answer the questions and MS Paint is provided to draw diagrams wherever necessary. It is the most basic method that can be designed and implemented for conducting online subjective examination. MS Paint is a good tool for drawing diagrams and almost all computer users are aware of the usage of this tool. The proposed system has a drawback that it doesn't take care of system crashes and network connection failures. Hence offline examination is a better option. Apart from this, the system will also require that the candidates are given more time to answer the examination as time need to draw diagrams on the system through mouse requires more time and patience.

Pranav Deshpande, Pooja Sonone, Gitanjali Patil, Aditya Achari [1] proposed a model which allowed candidates to answer examination using tablet PC, Stylus and secure communication network. An android application interface is provided to write the answers. It also has a feature that allows candidates to review answers at any time during the examination. The selected question paper is stored in encrypted format in the University database. The invigilators selected by the examination centre login to the server through their tablet at the time of the examination and get the question paper on his tablet. He shares the question paper with the candidates in digital form. After the students authenticate themselves with the one-time password given to them they can start answering the paper. At the end of the examination the invigilator collects all the answer documents in digital format into his account and uploads them to the ubiquitous cloud. Writing on a tablet is simpler than writing on a PC using

keyboard and mouse. More time is required to draw diagram on the PC whereas on a tablet it is like writing on a booklet. Writing answers and drawing diagrams on a limited user interface like a tablet is difficult as compare to writing on a real paper.

Pete Thomas [5] proposed a model to draw diagrams in online examinations. The model proposed a drawing tool to be added to an existing online examination system. A simple tool was proposed with minimal familiarization was essential for subjective examinations. A drawing canvas was provided to add diagrams which could be used to drag and drop objects into the canvas. This tool supported simple diagrams with rectangular boxes with text and directed links with associated text. This text provided the labelling and necessary explanations. A tool was provided that could save this diagram to a specific file on the hard disk and uploaded this file to the server when the student submitted the examination answers. The problems faced by the students in using these tools were in the space provided to label the boxes and the problem with scrolling through the user interface while drawing. But most of the subjects need more drawing tools than just boxes and links.

## 3. PROPOSED SYSTEM

The digital examination system can be made more user friendly by using the input devices that allow candidates to write on the paper or and input device such as a digital writing pad that is similar to writing on a booklet. There are many such devices available in the market a few of them that can be used are discussed here.

### A. Sony digital paper [6]

This device works in conjunction with cloud. It allows users to write with a digital pen, save and share the documents. The device is light and handy enough to carry easily anywhere. Figure 1 shows who the Sony Digital paper can be used to write. It has a user-friendly screen that is good enough to read and write in both indoors and outdoors.



Fig-1: Sony digital paper [6]

Writing on this device is like writing on a paper with a pen. We can highlight text and erase text as we do on a paper.

It does not get disrupted with the movements of the palm on the surface.

The specifications of the digital paper are that it is a full letter size device (13.3 inches diagonally) with the user interface being 8.5inches X 11inches in size. The device provides security through data encryption and digital security managed by a tool.



**Fig-2:** Connect the device via a cloud [6]

This device can be used to write examination and submit the answer document to a compatible cloud storage service. Wireless transfer of documents can be done through the WebDAV protocol enabled on the device.

The major drawback of this device is that it allows users to collaborate with other devices to work on the same files.

**B. Staedtler Digital Pen Price[7]**

This device is designed to help users to create handwritten documents on computer, laptop or a sheet of paper (figure 3). This digital pen (figure 4) comes with a receiver. The receiver needs to be attached to the writing pad which comes with a clip. This receiver digitally captures the digital pens movements and records the notes and diagrams drawn on the paper. This device has a built-in handwriting recognizing software that converts handwritten notes to digital text.

As shown in figure 3 the digital pen also includes a USB cable that connects the receiver to the desktop or laptop to transfer the notes.



**Fig- 3:** Staedtler Digital Pen



**Fig-4:** Staedtler Digital pen and receiver

**C. Solo Bluetooth Digital Pen[8]**

This device has a built-in memory that can save about 100 pages. This device also has a functional clip to which the receiver can be attached to writing pad. In this digital pen ink can be refilled and works in two different modes. One is the mobile mode and other is online mode. In mobile mode the pen can be used on any surface while in online mode the pen can be connected to a PC or laptop through a USB cable or via a Bluetooth for transferring handwritten contents to the system (Figure 5 & 6).



**Fig-5:** Solo Bluetooth Digital Pen connected to a PC



**Fig-6:** Solo Bluetooth Digital Pen connected to a Smartphone and android phone

This device has handwriting recognition software that recognizes several languages except Indian languages.

**4. CONCLUSIONS**

In traditional examination system there is a lot human efforts required along with stationery needed for conducting the examination system. Even if one candidate is going to answer the examination a set of people responsible for conducting the examination are required to do all the formalities. With the proposed system, candidates can answer their examination on digital answer paper and submit the digital answer paper to the server directly from where it can be accessed for human evaluation system or automatic evaluation system. This process will reduce the tedious job of the examination boards, examination centers and the invigilators. Automatic evaluation can further be help in reducing the task of the evaluators and also facilitate a fair evaluation system.

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