Digital Content Editor with Markdown Support

Mandeep Katre[1], Jaya Gaur[2], Manas Srivastava[3], Ritik Gupta[4], Sourodeep Ghosh Roy[5]

[1]Professor, [2][3][4][5]Student, Computer Science and Engineering, Inderprastha Engineering College, Ghaziabad, India

Abstract: *During Coronavirus, up to 94% of understudies got impacted. Understudies, yet to a great extent instructors confronted significantly more hardships to change with web based educating. It became critical to have an all-around shaped concentrate on material, to instruct online actually. Any elegantly composed material isn't enough for understudies to study. It should be intelligent. Present apparatuses accessible to make intelligent substance are either not adequate or costly to utilize. The majority of them are monotonous to work, when used to make a scale. This manager instrument means to give a stage that conquers every one of the issues referenced in regards to the review content to understudies. Making on the web content creation simple, compelling and euphoric for instructors in the pandemic times as well concerning what's in store. This exploration paper centers around making a thorough computerized content creation apparatus that upholds boundaries that are expected for creation or current advanced content, utilizing markdown, katex. It expects to fulfill the necessities of numerous client gatherings, particularly instructors, foundations and educators.*

Keywords: *Digital Content Management, Markdown, Katex, Code snippet, Syntax Highlighter, Mathematical Expressions, UML diagrams, flowchart, Educators, Institutes*

I. INTRODUCTION

Content creation is a thing that every educator uses almost every day in making their own notes or material for students. Yet, this part of the job is often underestimated and less efforts towards making a good understandable digital content are made, as it is often seen as a burden. [1]. Nowadays there are many solutions for generating digital content on websites, many of which are free to use. That makes it easy for institutes or educators to easily build content with least expenses. But while these tools work fine, they lack certain support parameters like image representation in different aspect ratios, video player options. These tools even lack facilities for technical courses like code snippets, syntax highlighter, mathematical expressions, flowcharts and other UML diagrams. Even if some tool is near to provide these features it is paid or easy to access for educators, such tools make digital content creation difficult. Although Markdown aims to have a simple syntax that should be easy to read and write [3], Markdown provides an easy syntax to insert code blocks, diagrams, tables and other content management operations.

Considering the fact that many educators throughout the nation are also old and the process of making the digital content should be very handy and comfortable to make. Lack of resources with people is also an issue, so to provide them with a free online content development tool would be a great solution. This is something we need to keep in mind while making this editor.

II. LITERATURE REVIEW

Regardless of the colossal development of e-learning in schooling and its apparent advantages, the proficiency of such apparatuses won't be completely used on the off chance that the clients are leaned to not acknowledge and utilize the framework. Subsequently, the effective execution of computerized content advancement devices relies upon whether the instructors, foundations will take on and acknowledge the innovation. Subsequently, it has become basic for specialists and strategy creators to comprehend the variables influencing the client acknowledgment of content administration instruments to improve the understudy's growth opportunity (Tarhini

et al., 2014a). Notwithstanding, late examinations have shown that content administration instrument execution isn't just an innovative arrangement, yet additionally a course of a wide range of variables like social elements (Schepers and Wetzels, 2007; Tarhini et al., 2014b; 2015), and individual elements (Liaw and Huang, 2011), authoritative, for example, working with conditions (Sun and Zhang, 2006) notwithstanding conduct and social variables (Masoumi, 2010).Such main considerations assume a significant part in how a data innovation is created and utilized (Kim and Moore, 2005).

The COVID-19 pandemic has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries. Closures of schools, institutions and other learning spaces have impacted more than 94% of the world's student population. This has brought far-reaching changes in all aspects of our lives. Social distancing and restrictive movement policies have significantly disturbed traditional educational practices. Reopening of schools after relaxation of restriction is another challenge with many new standard operating procedures put in place. Within a short span of the COVID-19 pandemic, many researchers have shared their works on teaching and learning in different ways. Several schools, colleges and universities have discontinued face-to-face teachings. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning. Digital learning is only possible with great digital content. Thus, the past recent years has taught us the importance of such online content development tools that cover all the aspects of content creation and cover use-cases for multiple user groups.

Content Development tools have played a crucial role during this pandemic, helping schools and universities facilitate student learning during the closure of universities and schools (Subedi et al., 2020). While adapting to the new changes, staff and student readiness needs to be gauged and supported accordingly. The learners with a fixed mindset find it difficult to adapt and adjust, whereas the learners with a growth mindset quickly adapt to a new learning environment. There is no one-size-fits-all pedagogy for online learning. There are a variety of subjects with varying needs. Different subjects and age groups require different approaches to online learning (Doucet et al., 2020). Online learning also allows physically challenged students with more freedom to participate in learning in the virtual environment, requiring limited movement (Basilaia & Kvavadze, 2020).
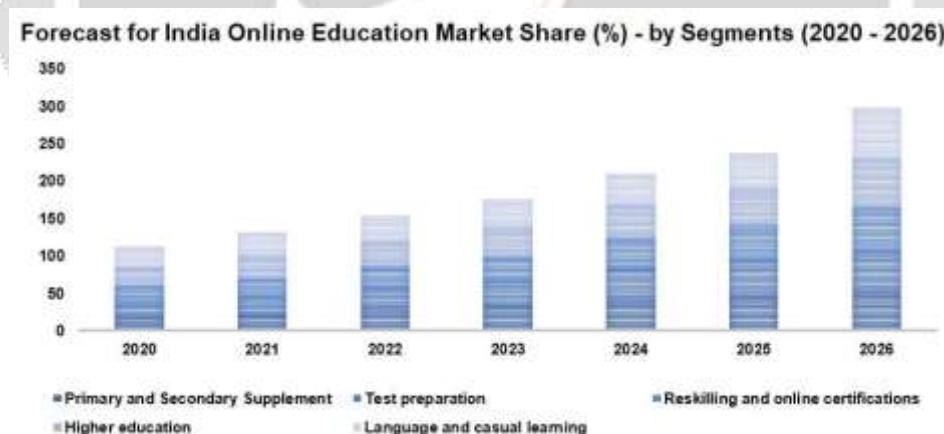

Fig 1: Forecast of Indian Online Education Market

III. METHODOLOGY

Incremental Model Approach is followed while developing this tool. In this online content editor, from user interface of managing content, edit content and preview content to content display is done module wise. Requirements are divided into multiple standalone modules of the software lifecycle. Each module consists of Requirement analysis, Designing and Development, Testing and Implementation. Incremental approach will help us to provide features to clients in a module-by-module manner.
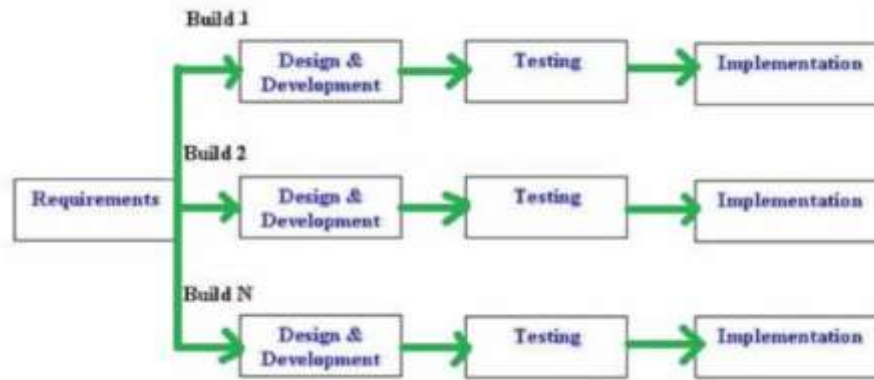
Fig 2: Incremental Life-Cycle Model

IV. EXISTING SYSTEMS

Today, the education industry has gained better knowledge about the potential of virtual classrooms and e-learning web apps. Virtual classrooms with advanced e-learning web apps have made students access more educational content from anywhere at any time.

As web apps have made learning easy for students, many educational institutions have already started embracing it.

Existing E-Learning Web Apps:

Google Classroom

Google Classroom is a set-up of online devices that permits educators to set tasks, have work put together by understudies, to stamp, and to return reviewed papers. It was made as a method for disposing of paper in classes and to make advanced learning conceivable. In any case, making of advanced content is beyond the realm of possibilities and clients need to depend on other google items to team up.

Educative Inc

Educative provides interactive courses for software developers. They are changing how developers continue their education and stay relevant by providing pre-configured learning environments that adapt to match a developer's skill level. For instructors, Educative provides the authoring platform for creating interactive content with just a few clicks.

V. RESULTS & DISCUSSION

After all the discussion, requirement analysis, UI designing and testing of this tool has led to development of the Digital Content Development Tool.

Panel to add different types of tools for content creation. This panel also gives users flexibility to shift their different sections and rearrange them as needed. Users can remove them, move them up and down.

Image selector with support for 2 aspect ratios depending upon the image size which suits better. Caption for images can also be added.

Markdown editor helps users to add mathematical expressions like calculus, trigonometry, etc. easily as well as some UML diagrams.

Code snippets has multiple programming language support like C++, C, JAVA, SQL and many more. Users can select the language and add their code. The code is represented with syntax highlighting for easy understanding and reading.

Often educators demand to add video links of their online lectures or someone else for reference, so here is the support to add URLs along with captions. This also has support to play the video.

What you see is what you get (WYSIWYG) editor is implemented, and provides near to word editor solution for content creation.

Educators need some practice quiz or objective questions in their content in between topics, so that students can judge their level of learning side by side. Quiz editor solves this need, it can add multiple/ single choice questions. Image attachment with quiz is given for some diagrammatic questions.

VI. CONCLUSION

The result of this research paper is a fully working online content management tool that supports adding of video URLs, to display these videos, image upload support with two aspect ratio support, adding of code snippets, syntax highlighter support, mathematical expression can be added to content, UML and other diagrams, markdown support and WYSIWYG editor editing.

It is a user tested application that is deployed on an amazon web service server. As the application supports dynamic content creation and management, it is currently planned to start real-world testing of the application. The application should be mostly production-read, but due to the smaller than expected user testing group, some usability issues might still arise. There are also some known areas that would deserve further improvements. The application will be released to a group of educators for content creation satisfying real world needs, further feedback and improvements from them if it is updated in this tool.

There also were some good UX improvements that would make this editor more user friendly. could not be included. Some improvements in uml diagrams support that will enable some left diagrams support in this tool.

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