



## Visual Platform For Reactive Documents

Muhammad Ilyas<sup>1</sup>, Dr Naveed Abbas<sup>2</sup>

Department of Computer Science, Islamia College University Peshawar, University Road Peshawar, KPK,  
Pakistan

okzilee@gmail.com<sup>1</sup>, naveed.abbas@icp.edu.pk<sup>2</sup>

**Abstract**— The aim of our work is to provide the visual platform for creating reactive documents. The electronic books, articles, lectures, and documents on electronic devices all are entirely static in the context of web. It remains same for everyone and it is also very difficult to change the written material in large or small scale on electronic documents, unless one is familiar with computer programming. The documents, lectures and other electronic articles are static whether those are stored offline or online. That helps us to learn but do not clarify our vision on different perspective when it comes to quantitative data. On the other hand dynamic articles needs programming, which make them interactive and becomes very handy to understand and explore the information very well. The electronic devices have the capability to write dynamic articles but no proper concentration has been provided yet. The main aim of this project is to facilitate the user to write specifically on educational dynamic articles, documents and lectures on electronic devices. Those articles and documents will be reactive that helping, students to learn and broaden their understandings. Teachers will also benefit to write in a more better and efficient way.

**Keywords**— Visual Platform, Reactive, Documents

### I. INTRODUCTION

In the modern era of electronic world we can observe that electronic article, books and lectures on electronic devices are not interactive for learning due to static in nature [1]. Conventional approach of teaching is based on a book, writing on a black board and having problems for students. A book guarantees fixed content and can be reused, where those lectures, notes and books are in hard form which are not easy to edit if they are printed. On other hand if we observe the electronic articles, document, books and lectures etc. They are easy to create, edit and reused [2]. These all electronic materials are static which helps students in learning but do not brings enhancement. The improvement and memorizing in learning can be achieved through interactivity [3].

The investigation was conducted with 166 students for the purpose of evaluation of learning effect using E-book which is not interactive in nature and printed book does not make any difference in learning [4]. The interactive learning clarifies the vision on different perspective which has not only impact on learning but it can empower the outcomes of students.

The change in technology bring ease of use and enhancement if we suppose from the beginning of the

computer technology it brought a wider change of easiness to the human beings in their work like at the earlier stages of internet lifestyle the webpages were static after the enhancement in technology the webpages became dynamic where CSS and JavaScript is linked with the web pages as far Ajax which effected the dynamism of the webpages [5, 6]. Later on html5 brought audio and video communication with in the web document [5]. There are many API which brought with new era of dynamism, Tangle API facilitates user to create reactive document on quantitative problems which needs programming.

### II. LATURATURE REVIEW

We can classify the existing researches that are relevant to our work into two classes according to our purpose and scope: Static and dynamic content on electronic documents.

There have been only few researches take place on Dynamic content of web pages, but there is a lot of material available on static nature of web pages. If we consider the current traditional teaching methods in our educational institutes you will come to know that how difficult it is to prepare the lecture for the student related to quantitative subjects such as statistics, mathematics, physics and even business accounts. It becomes very tough to clarify the concepts of specific problems based on quantitative approach. In interactive platform is essential due to which we increasing our abilities to interact with E-learning in response how the E-learning platform will adopts to us will determine its future and our own [6]. Furthermore online contents and articles relating to quantitative data are difficult to understand sometimes for students due to static in nature. Data examination can be done in such a way that the reader interpret the meaning gain knowledge and build new his own new ideas of the E-learning [7].

These problems can be overcome by implementing some interactive tools that assist educational system and improve the sense and understanding of e-learning, online contents and articles writing. However there are some interactive tools available which assist the e-learning such as Demos graphing calculator [8]. Which is using blazingly-fast math engine, the calculator can instantly plot any equation, from line and parabolas up through derivatives and Fourier series. A demo is used by students, teachers, researchers, and general math enthusiasts from all over the world. There is also another

interactive web based tool which was developed in the previous year. The purpose of developing the tool is to enhance the learning and to provide an efficient way of understanding complex systems. The tool focuses on the electrical engineering subject who adds interactivity to circuit diagrams, simulators and viewing graphs relating to the circuits. The tool extends the exploration of learning on the runtime and proven good results [9, 10, 11].

As due to static of quantitative document in nature, Reactive document is a revolution over a traditional and static document or content. Reactive document utilize less time in understanding the real world problem on behalf of quantitative data. The quantitative data in the context of web are entirely static, these quantitative data are not interactive and do not help us to learn and understand the article, lecture, notes, online content etc. problem as the consequences of your adjustments are reflected.

### III. METHODOLOGY

It is a fact that dynamic webpages create with the help of databases. These update the website time to time and keep the content up to date. [12]. in our RDPLATFORM cases there will no need of database for updating the assumption of the users on client side through JavaScript library Tangle API.

Observing all those problems and present interactive tools, we are introducing the concept of interactive article and content writing, and reading on electronic devices. The articles or content which consist of some quantitative values or data in the form of web based electronic document. Electronic devices are capable of being such an efficient and interactive but no proper concentration has been provided yet. The interactive article and content writing can be achieved only through the visual text platform where the users will be provided with a visual platform to create reactive document where programming will not be require for user to create a reactive document. The text platform is web based which can be developing by optimizing the core web technologies such as HTML-5, CSS-3, JavaScript, and a JavaScript library Tangle.js for reactive documents.

The application will be made up of different technologies such as HTML5, CSS3, JavaScript, Ajax, Bootstrap and Tangle API to make it fully functional platform. The RDPLATFORM will have the feature of writing the static document in which the users will declare and link the variable before exporting to dynamic document. The dynamic document will allow the users to play with the quantitative data and make different assumption for his/her satisfaction. These assumptions can be used as a class lectures, electronic books, articles and webpages.

### IV. IMPLEMENTATION

RDPLATFORM is the main aim of this research that there should be visual GUI for the users to create reactive documents which is beneficial for both technical (programmer) and non-technical (illiterate to programming). This research work will bring the enhancement in field of education which associates

with any subject including some quantitative data. This will help the students to understand and learn by approaching in an efficient way. There are two types of users with respect to the web related field where one is passive users and the second one is active users.

- **Passive users:** The passive user reads the content of electronic document as it is. Passive users is not curious about the author scenario and do not want to engage himself in alternatives. Due to highly interactivity in our RDPlatform the passive user will also take interest to see the content of electronic document from different perspectives.
- **Active users:** An Active users want to interact with the content of web and take more interest to see the content of their interest more deeply and from different angles. So, for that they want to experiment, ask questions, play with content and want to see the things according to their desire. The RDPlatform is the best tool for critical thoughts and deep understanding [13].

The RDPLATFORM will provide the visual platform of Tangle API which assists to create dynamic document of quantitative problem without programming. The tool will help in all educational fields to solve a problem with respect to different values. Consider the below example

A person runs 3 kilometer/h than how many kilometer person will run in 30 hrs.

So in above example result will be produce by multiplying these two variables kilometers\*hrs = 3\*30 hence, will produce the result of the above example. If one digit is increase or decrease by a person in the quantitative value it may leads to imprecise result, but when the same problem is solve through a machine device according to the formula so it will always produce accurate result to the users.

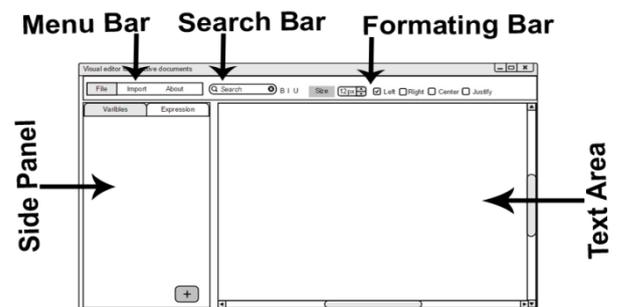


Figure 1. Rdplatform for Reactive

The GUI of the application will be like same as above where users will have a platform to create reactive document with embedded Tangle API and export it in to html document. The RDPLATFORM will facilitate users to write text, format text and manipulate text and variables. This tool will allow user to import the text document, user can manipulate and create reactive document from it. The visual interface is showed below.

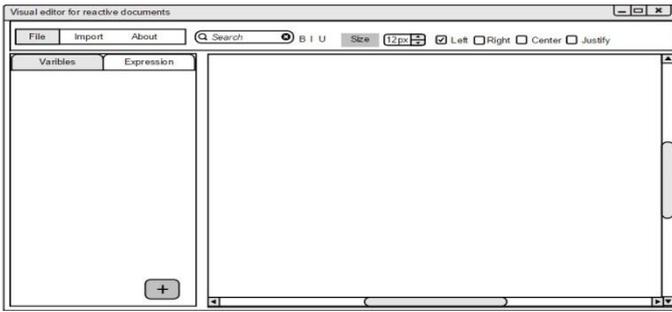


Figure 2. Visual Platform For Reactive Document

To create the reactive document from the scratch with coding for a user may get too much time consuming and may be difficult to create reactive document, the study of the related work helped us out in our work, Tangle API help us to create reactive document by using its library functions. This API will also help us in creating the visual platform for reactive document. The following figure illustrates creating of reactive document with the help of RDPLATFORM.

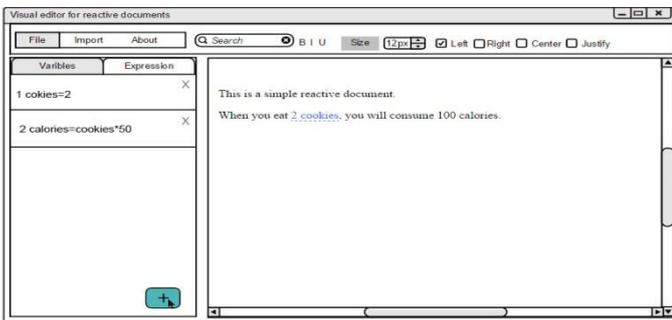


Figure 3. Creating Reactive Document

The above figure shows the UI to user where user can create reactive documents by the writing content and manipulating it. The figure 3 is the labeled UI, here it is described that how the user will interact with RDPLATFORM and the description of the panels.

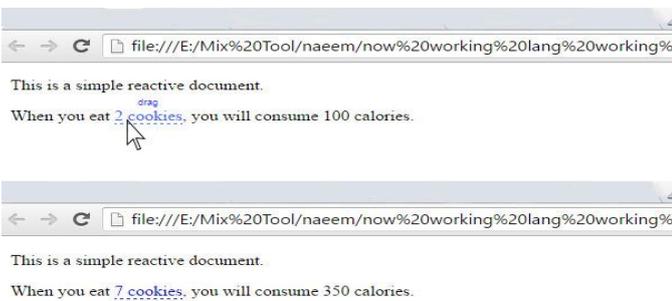


Figure 4. Reactive Document

The above figure shows the exported document (output) to the users where users can play with the quantitative data/value by simply dragging the cursor left or right for changing the values according to user assumption. In variable panel the pre define variable will remain static that will indicate to users from where his/her assumption starts.

Although the RDPLATFORM is made up of many built-in libraries Tangle API, CSS and JavaScript coding where for the manipulation of variable having some sort checks like variable is assigned a valid integer value, the value of the variable relates to the generated pattern for the application. Tangle API is used for the helping library for the reactive document to work. Bootstrap can be use for the UI design to make it user friendly and responsive. As we know that Tangle API helps in reactive document while the quantitative data changes in it.

#### Pattern Generated for Mathematical Operation

For single variable

```
if((var=(int value)) || ( var=var2))
{
Content }
```

For two variables

```
if(var1*var2)
{
if(var1=(int value)*var2=(int value)){
content}
else If(var1=var2*var2=(int value)){
content}
else if(var1=(int value)*var2=var1){
content}
elseif(var1=var2*var2=(int value)){
content}
}
}
```

The main thing is to create an external reactive document which can be used and placed in any where users wants it, document can be exported by the export function where all the libraries needed for the Reactive Document can be embedded and exported to html document which can be used in any form, it can be added to the articles, lectures, and internet forums, which will be helpful in many fields like Educational field etc.

Reactive Document Platform will be user friendly, Responsive, and platform independent and no need of installation. RDPLATFORM will work on standalone computers as well as online on internet. Visual platform will be provided to those users which are programming illiterate so they can take advantage. The visual platform is made in such a way that the users can play with the quantitative values. This will make our RDPLATFORM more interactive and unique.

#### CONCLUSION

The Visual Platform for making reactive documents will encourage. It will affect the E-learning in an enthusiastic manner and E-learning will be interactive. The students will get more benefit from reactive documents as our Visual Platform for reactive documents will provide a user friendly

visual platform where a common user will be able to use it easily even if they are aliens to programming.

#### FUTURE WORK AND RECOMMENDATION

Every human-made project always has potential for further improvement. Enlisted below are some of the improvements we recommend, in order to make the system even more efficient.

- Offline platform for mobile OS

This platform will work online on mobile devices with almost every OS but the offline platform can be made in future for this reactive documents platform.

- Exportable Explanations

An exportable explanation makes the abstract concrete, and allows the reader to develop an intuition for how a system works. If we do changes in quantitative data so along with this a graph can be interactive tool to involve the user and which will more interest and easy to understand the problem in the visual platform. This will allow the readers to understand the complex graphs and working of formulas behind it.

- Contextual information

Contextual information allows the reader of this platform to learn related material on time, and cross-check the author's claims. As much as we might wish authors to write exportable explanations, many won't. And even authors with good intentions can't predict everything that the reader will want to explore [14].

#### REFERENCES

- [1] Brad Miller, David Ranum, Beyond PDF and ePub: Toward an Interactive Textbook, ITiCSE'12, July 3–5, 2012, ACM 978-1-4503-1246-2/12/07.
- [2] R. Plamondon and S. N. Srihari, "On-line and off-line handwritten character recognition: A comprehensive survey," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 22, no. 1, pp. 63–84, 2000. I. S. Jacobs and C. P. Bean, "Fine particles, thin films and exchange anisotropy," in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.
- [3] Y. Roger, H. Sharp and J. Preece, (2011) "Interaction Design: Beyond Human-Computer interaction" John Wiley & Sons, Inc.
- [4] Yueh-Min Huang, Tsung-Ho Liang, Yen-Ning Su, Nian-Shing Chen, empowerment personalised learning with an interactive e-book learning system for elementary school students, August 2012, Volume 60, Issue 4, pp 703–722
- [5] Gaurang Kanvinde, Luz Rello, and Ricardo Baeza-Yates, "IDEAL: a dyslexic-friendly ebook reader", Proc. of the 14th Int'l ACM SIGACCESS Conf. on Computers and Accessibility, pp. 205–206, ACM, 2012.
- [6] Paul Gilster, An excerpt from Digital Literacy, Meridian: Digital Literacy Tuesday, July 27, 1999.
- [7] Patrick Sauter, Gabriel Vögler, Günther Specht, and Thomas Flor, "A Model-View-Controller extension for pervasive multi-client user interfaces", Personal and Ubiquitous Computing, vol. 9, no. 2, pp. 100–107, Springer, 2005.
- [8] Glenn A. Bowen, Document Analysis as a Qualitative Research Method, Qualitative Research Journal, vol. 9, no. 2, 2009.
- [9] R. Nicole, "Title of paper with only first word cAPitalized," J. Name Stand. Abbrev., in press.
- [10] Shafqat Hameed, Atta Badii, Andrea J Cullen, Effective E-Learning Integration with Traditional Learning in a Blended Learning Environment, (2008) European and Mediterranean Conference on Information Systems 2008 (EMCIS2008), May 25-26, Al Bustan Rotana Hotel, Dubai
- [11] Martin oliver, Keith trigwell (2005) Can 'Blended Learning' Be Redeemed? Journal of E-Learning, Volume 2, Number 1, pp. 17-26.
- [12] Md. Baharul Islam, Arif Ahmed, Md. Kabirul Islam and Abu Kalam Shamsuddin, Child Education Through Animation: An Experimental Study, International Journal of Computer Graphics & Animation (IJCGA) Vol.4, No.4, October 2014. Rodrigo Laiola Guimarães, Dick Bulterman, Pablo Cesar, and Jack Jansen, Synchronizing Web Documents with Style.
- [13] Enid Montague and Jie Xu, Understanding Active and Passive Users: The Effects of an Active User Using Normal, Hard and Unreliable Technologies on User Assessment of Trust in Technology and Co-User
- [14] F. Ciravegna Adaptive information extraction from text by rule induction and generalisation. In Proc of the 17<sup>th</sup> IJCAL, Seattle, Ua, August 2001.
- [15] <http://worrydream.com/ExplorableExplanations/>, Aug 21, 2016



**Muhammad Ilyas** was born in February 18, 1990 in long lasting area of KPK district Hangu, Pakistan. I am MS(Computer Science) candidate in well reputed and prestigious institution of Pakistan Islamia College University of Peshawar KPK. I have done bachelor degree in Computer Sciences from CUSIT Peshawar, Pakistan.

I am currently working as a Subject Specialist of Computer Sciences in government educational institute. My research focus on E-learning, Digital Image Processing, Machine Learning and Neural Networks. I have honour of demonstration of lectures on IOT(Internet Of Things) in different educational institutes working under HEC.

I have completed about 4 research paper in the field of Digital Image Processing along with IOT(Internet Of Things).