

# The Development of Web-Based Learning: The Interactive Science Website of The Topic of Animal Types for Standard Two (2)

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**Abstract:** An interactive site developed to assist the teaching process of the educators because with the use of the site such interactivity can create a fun atmosphere at the same time being able to convey information more effectively. Therefore, this study aims to design, develop interactive sites as well to evaluate the functionality of interactive sites for the topic of Animal Types for standard two (2) s student. To develop this interactive site, design model used is the Hannafin & Peck model. Developer use qualitative methods with science teachers at Sekolah Rendah Kebangsaan Seri Jaya, Batu Pahat to identify improvements in the learning process of science subjects for the topic types of animals. The expert evaluation was done involving four (4) experts who using an expert check form instrument. Results from the findings of the study shows all experts agree that this interactive site is interesting and suitable for use by target users. Overall, the expert's verification findings show all three designs namely information design, interaction and between the face is appropriate. In conclusion, this interactive site can be recommended to educators for use as a teaching aid which has the potential to improve student achievement in the future come.

**Keywords:** Interactive Sites, Web Application, Websites Development

## 1. Introduction

In these globalization generation and the increasing number of high-tech wise societies, recognizing the factors that covers the use of interactive websites with factors which includes cognitivism, constructivism and contextual must be emphasized in the teaching of the instructor. Pupils no longer want to analyze information most effectively, but understand abilities means of technological knowledge to enhance their analytical abilities and become more effective in problem solving (Norazilawati, 2017). The use of technology in science subjects can improve student understanding where students can visualize how a scientific process takes place better.

Through this approach, students have the possibility to mix scientific knowledge, tactics and the ability to wonder to understand a concept. Observations conducted through Rose Amnah (2019) determined that mastery the abilities of the means of technological knowledge are better in phrases mind versus mastery of information and standards scientific knowledge. When the student has mastered the abilities of the way technological knowledge, they can find solutions in addition form their own thoughts or principles about any scientific phenomena.

### 1.1 Web-Based Learning

In the present day, the internet has evolved into a basic necessity that most people cannot live without. Web-based learning, often known as web applications (apps) with interactive multimedia, is available to internet users. According to Zol Bahri and Shazmin Aniza (2018), the multimedia created from a computer-assisted learning method makes learning engaging and entertaining while also facilitating rapid and simple conceptual understanding in pupils (Jamaluddin & Zaidatun, 2011). The link between theory and reality may be seen in real life by students when component multimedia is added in the form of dynamic demonstrations in multimedia presentations, claim Ariffin et al. (2017).

Web apps, as defined by Agustiniingsih (2015), are programs that access computer networks using browser technology to run programs. Web apps are computer programs that are kept on a server, sent over the internet, and accessible using a browser. It is clear from the description that web apps are any programs that may be accessed using a web browser on a network like the internet or an intranet. Web apps are computer programs that are written in programming languages like HTML, JavaScript, CSS, PHP, and others that support web-based applications.

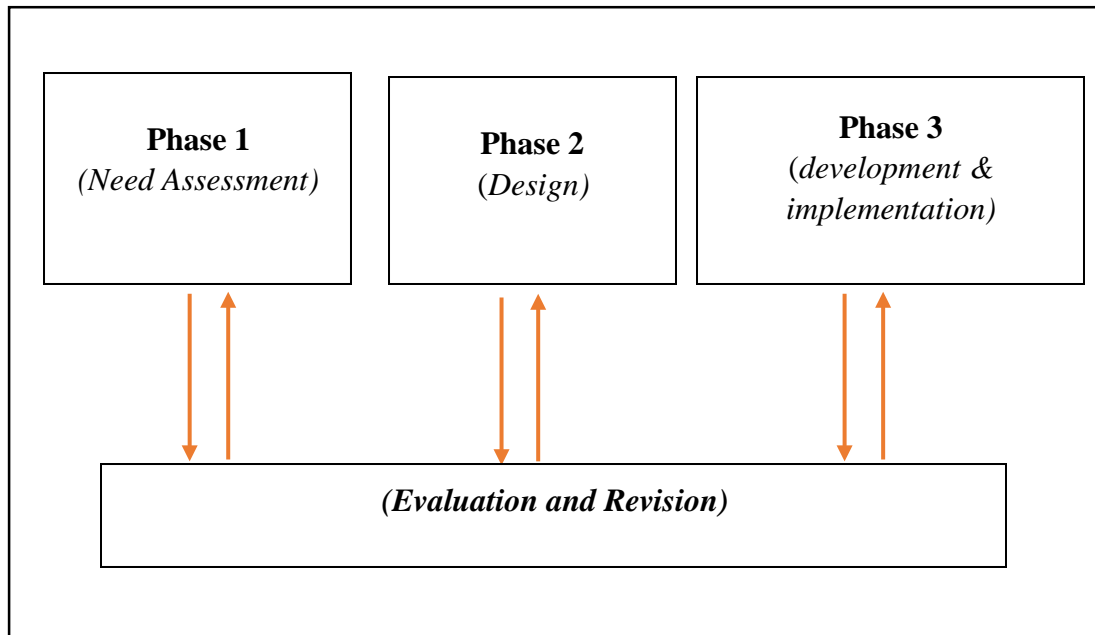
### 1.2 Three Dimension (3D) for Online Teaching and Learning

Interactive websites are frequently used in lecture halls as teaching and learning tools. Web-based instruction has been found to be a terrific way to engage students, boost motivation, and enhance the learning process. Using online 3D features in websites helps to receive information that is clearer and more exact, as demonstrated for material presentation education by (Agustiniingsih) (2015).

One of the multimedia components that might aid educators in the teaching and learning process is the usage of 3D elements. Noraffandy and Azilah (2010) claim that while producing interactive websites used to be expensive, educators can now afford to do so and create their own websites based on their ideologies and creativity. For instance, the usage of 3D components in the classroom may be used as a useful tool to improve the effectiveness of already used traditional approaches. Additionally, a combination of a clear visual display and aural utilization might reveal the reality of the issue (Sidek, 2016).

## 2. Methodology

The research methodology selected in the development interactive web-based learning using the Hannafin and Peck (1988) design model as a guide. The researcher found that Hannafin and Peck models are one of the most suitable methods because they are more concise, clear and easy to use in the development of web-based interactive.



**Figure 1: Hannafin and Peck (1988) design model**

The three-phases evaluation and repetition process are shown in Figure 1 of Hannafin and Peck's (1988) design model to guarantee the accuracy of the information provided. It is essential that developers do continuing evaluations on each step as it is implemented rather than waiting until the conclusion of the development process to do so. As a result, it is possible to identify issues in the early stages, and adjustments are made at each stage to guarantee the quality of the product being created.

Therefore, this design model is in-class ability to receive lessons primarily for interactive learning in which topic type of animal teaching for Primary Science courses. The location chosen is the Sekolah Kebangsaan Seri Jaya, Batu Pahat. Development of Interactive Web-Based online was developed to make it as one of the Teaching Aids for the convenience of students who took the Primary Science course Topic the Animal Types.

Researchers used Autodesk 3Ds Max software which is one of the capable software develop a quality 3D model and animation. This software was chosen to develop an interactive website that includes 3D elements using Verge3D to improve students' understanding of science subjects. Moreover, this software is more interactive compared to other software. Autodesk 3Ds Max is used to create 3D model in web-based to students to learn about The Type of Animal. Verge3D is used to upload the project in web-based to be opened by teacher and student anywhere in any type of device with internet connection. In addition, the developer also included instruction in websites so that students better understand.

The population involved primary school in the topic type of animal subject Science for students in second year. The study sample that was selected by the developer was the lecturers. Besides, the developer has also selected three experts consisting of the lecturers and industry player proficient in multimedia to evaluate content design, design interface and interaction design. The instrument used interview session for get expert validation about the functionality web-based learning.

The design model of Hannafin and Peck (1988) was chosen as a guide in this study because this model emphasizes the process of evaluation and repetition in three phases to ensure that the information conveyed is accurate. This is because, the developer does not have to wait until the end of the development for the evaluation process, but the developer should evaluate at each phase that is implemented continuously. Thus, this situation can detect problems that arise in the initial phase and improvements will continue to be made in each phase to ensure the quality of the product developed. This model consists of three main phases namely 'Need Assessment Phase', 'Design Phase' and 'Develop

& Implement Phase'. In addition, each of these phases will go through a continuous evaluation and review process.

At the initial stage, the researcher has identified relevant topics based on interviews with experts who are experienced in science subjects in year 2. The design phase is the second phase in Hannafin and Peck's model. It is used to transfer the information found in the requirements analysis phase to the physical sketch used during the development process. The development and implementation phase are the third phase in this model. In this phase, all the main elements designed in the previous phase are translated into a more practical form. At the end of the phase, the researcher made an expert evaluation of three experts. In this phase, the developer will make an evaluation process and proceed to the last phase which is the development and implementation phase.

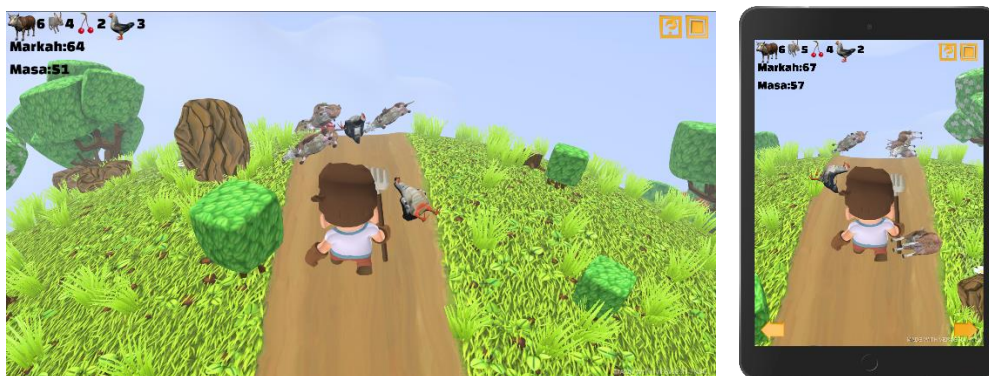
### 3. Results and Discussion

Figure 2 shows main page web-based learning for Animation Technology subject. In this web-based have one menu (*play button*).



**Figure 2: Main page interactive web-based**

Figure 3, show 3-dimension model interfaces. Developers were prepared five (5) 3D model for learning about The Type of Animal.



**Figure 3: 3D animation learning interfaces**

Figure 4, show the results interface that cover the entire type of animal that students learn. The 3D model is random. The playground has been prepared according to the students' level of understanding of a relevant learning topic. Users need to catch all the animal to find out the level of understanding because there are total marks after completing all.



**Figure 4: Results interfaces**

Table 1, show the developers have analyzed the views and expert reviews that have been proposed by the three experts on the functionality of web application development interactive web-based online. Improvements have been made to content design, interaction design and design interface. Expert views and comments on the development of this product are as in table 1.

**Table 1: Expert views and comments on the development**

Expert	Expert Positions	Reviews and Comments
Expert 1	Lecturer in the Faculty of Education Faculty of Science Computers and Information Technology at UTHM Experienced for 18 years in the field of Information Technology and Software	-Suggestion to make sure students only select those animals
Expert 2	-Three Dimension (3D) Animator at the Orion Digital Studios at Batu Pahat -Experienced for 19 years in the field of Animation 3D Based	-Specify the objectives of each level so that there is a difference -the writing can be enlarged further so that it is easy for the user to read
Expert 3	-Teacher of Science Primary School at Sekolah Kebangsaan Seri Jaya, Batu Pahat -Experienced for 28 years in the Science Primary School	-The homepage interface display needs to be placed autoplay video explains about this web -Arrangement of instruction of tutorials should be placed scroll down button so that the user can select which part they want down and the title name so that the user has a choice to choose. -Enter FAQ for this web -The bottom button does not have to be the same

Table 1 shows that all three experts have given suggestions for improvements to the products developed. One of them was the expert's recommendation to rename the content of the lab sheet's title to "instruction of interactive websites." Additionally, the initial specialist must guarantee that pupils just choose those creatures. On the other hand, the second expert commented on the goal of the interactive web-base to identify the goals at each level so that there is a distinction. The third expert suggests placing the video on the front page of the website. Furthermore, the font size is inadequate. In addition, he advised using the scroll down button so that people could quickly achieve their goals. Additionally, experts advise developers to incorporate FAQ for the finished web. Overall suggestions and actions made by the developer to improve.

Prior to developing this interactive, the developer had sketched out some initial sketches or storyboards by incorporating multimedia elements. Developers incorporate multimedia elements because it is an important thing which needs to be taken into account in producing something interactive especially a product which involves children as target consumers. Among the multimedia elements used in this design process are graphics, text, audio, as well as design form of interaction. According to Hamid (2016), multimedia is a combination of elements text, graphics, audio, video, and animation that use computers as tools presentation control to enable users to present information, interact, they create and communicate so that the learning process can presented more interestingly. Therefore, the appropriate use of graphics can attract more students to learn by using this interactive product.

Each storyboard screen developed by the developer has provided such important elements arrangement of appropriate buttons and icons as well as other multimedia elements used such as text, graphics, audio, video and animation to attract interest users of this website. this statement is also supported by Cheng (2008), multimedia elements can help in terms of improving students' understanding by using the variety of multimedia elements available in presentation of learning content.

The use of Autodesk 3ds Max software was applied to their process 3-dimensional (3D) element shapes. Developers also sketched graphic designs 3 dimensions (3D) and shapes related to the topic theme of the type's animals using Autodesk 3ds Max 2023 software for produce a design that appeals to the target user i.e., second year student. The use of these interesting graphics can be identified made as an attraction to this generated interactive web-based.

#### **4. Conclusion**

In conclusion, through the results obtained, the researchers can conclude that the development of web application in 3D web-based for learning The Type of Animal online can be used as teaching aids and support for interactive learning where the provision of 3D model of element related to topic of primary science. In addition, the development of this product can help students and teachers in the teaching and learning process. Therefore, the developers hope that, this web-based learning can be use in pandemic covid19 as a teaching aid in Science Primary subject for primary school especially for Primary School Student.

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## References

- Agustiningsih. (2015). Video Sebagai Alternatif Media Pembelajaran Dalam Rangka Mendukung Keberhasilan Penerapan Kurikulum 2013 Di Sekolah Dasar. *Jurnal Pancaran*. Vol 4, No 1, 55-68.
- Anuar, H., & Ahmad Zamzuri, M. A. (2010). Transformasi kaedah pengajaran di politeknik: Kepentingan media animasi dalam membina kefahaman jitu pelajar terhadap isi kandungan abstrak. *Prosiding Seminar Kebangsaan Transformasi Pendidikan Teknikal (MyTEDT10)* (hh. 247-252).
- Hazwani, M. N., Noor, R. A. B. & Norziah, O. (2017). E-Pembelajaran Dalam Kalangan Pelajar Di Sebuah Institusi Pengajian Tinggi Selangor (E-Learning Among Students of Higher Education Institutions in Selangor). *Malaysian Online Journal of Education Attarbawiy: Malaysian Online Journal of Education*, 1(1), 74–82.
- Nuari, F. & Ardi, H. (2014) Using camtasia studio 8 to produce learning video to teach English through e-learning. *Journal of English Language Teaching* 3 (1), 259-267.
- Noraffandy, Y. & Azilah, A. (2010). *Modul Pembelajaran Kendiri (MPK) Bagi Perisian Macromedia Authorware 7 (Asas Penyediaan Kemudahan Interaktiviti Di Dalam Persembahan)* Retrieved from <http://eprints.utm.my/10915/>
- Mohsin, M.S.F.A & Hassan, R. (2011). *Pengajaran dan Pembelajaran Berasaskan Streaming Video” Bagi Meningkatkan Tahap Kefahaman Pelajar Abad Ke-21*. PhD thesis: Universiti tun Hussein Onn Malaysia.
- Omar, R. & Ahmad, J. (2009). Kesedaran, Penilaian dan Penerimaan e-Pembelajaran dalam Kalangan Ahli Akademik (Awareness, Evaluation and Acceptance of e-Learning Among the University’s Academic Staff). *Jurnal Pendidikan Malaysia* 34(1), (2009): 155 – 172.
- Razali, Z. B., & Abdul Shukor, S. A. (2012). Comparison Study Between Multimedia and Simulation Courseware Toward Students’ Achievement Based on Different Levels of Motivation. *Jurnal Teknologi*. <https://doi.org/10.11113/jt.v45.346>
- Zaidatun Tasir, Jacquelin S. Linggu, & Jamaluddin Harun, (2011). Penggunaan Alat Rangkaian Sosial di kalangan Pelajar di sebuah IPTS di Kota Kinabalu, Malaysia. *Jurnal Teknologi Pendidikan Malaysia*, 31–47
- Abdullah, N. (2017). Development of Interactive Software for Implementing the Science Process Skills in Science Primary School. *International Journal of Academic Research in Business and Social Sciences*, 7(6). <https://doi.org/10.6007/ijarbss/v7-i6/3033>