

# Developing IT-based learning media in sports anatomy

*by* Sanusi Hasibuan

---

**Submission date:** 06-Oct-2022 10:11AM (UTC+0700)

**Submission ID:** 1917899527

**File name:** 6\_ISS-42-S\_International\_Sport\_Studies\_2020\_42\_cek-49-55.pdf (397.67K)

**Word count:** 2773

**Character count:** 14737

## Developing IT-based learning media in sports anatomy

Sanusi Hasibuan, Muhammad Chairad & Tarsyad Nugraha  
State University of Medan, Indonesia

### Abstract

*The purpose of this research was to explore the feasibility of using IT-based learning media products developed in a university's Physical Education, Health and Recreation Department and identify the students' responses to this innovation. The research was a process of Research and Development (R&D). Researchers used the process outlined by Borg and Gall (1983) as modified by Sugiyono (2015). However, due to time constraints, this research did not include the seventh and final step of improvement. The target of this research was the lecturers and students who carried out the teaching and learning with Powtoon assistance at an Indonesian State University. Existing literature, observations, and questionnaires contributed to the data gathering, which involved expert analysis and student input.*

*Keywords:* learning innovation, powtoon application, anatomic matters, education, media development

### Please cite this article as follows:

Hasibuan, S., Chairad, M., & Nugraha, T. (2020). Developing IT-based learning media in sports anatomy. *International Sports Studies*, 42(e), 43–49 doi:10.30819/ iss.42-1.05

### Introduction

One of the most important aids to class-based learning success is the use of media. Media are learning tools that help teachers deliver messages and subject matter to students effectively and efficiently. They can play an important role in the learning process, by helping students concentrate and focus on the subject matter. The development of technology continues to have an impact on the development of instructional media. With the ongoing development of both technology and new information in the modern world, the development of learning media inevitably involves implementing information technology systems into new forms.

From observation it was identified that students in the odd semesters of 2019/2020 failed to master an understanding of sports anatomy. It was noted that the learning process was still centered on lecturing and an active role for students was lacking. There had been no attempt to involve the use of additional contemporary learning media. Therefore, a need to apply IT-based learning was identified. One such software that has been found useful in the development of learning media is the Powtoon application. Powtoon is a web-based animation software. It enables designs to be created that involve basic shapes, cartoon shapes, and certain themes. Presentations can use

background sound, music, and even sound that has been specifically recorded. Animation and cartoon forms are available along with a range of movements, so it does not take long to design a required episode. The designer can also easily adjust and change the appearance of the presentation. The Powtoon application can be used to create a media learning presentation in the form of an animation that conveys ideas and concepts related to the subject matter that is to be learned in the classroom (Chandler, 2015).

George (2017) identified Powtoon as a tool that teachers can use to create beautiful animated videos and allows them to create varied ways of expressing creative ideas through video presentations and mind maps. Animated media using Powtoon software was thus chosen for this project on account of its potential to foster student interest and motivation towards their learning.

Learning is at the heart of a quality education process. It is supported by various factors as well as learning media. These include fellow students, lecturer competencies, other learning materials and tools, the learning climate in the classroom, and so forth. The technological facilities provided by the University in which this study was based were very supportive with students already familiar with the use of software such as powerpoint. However, the application rate was still low and based on this there was a clear need to develop better learning media. The media used needed to be interesting and matched to the characteristics and interests of the students.

## Methods

The research followed a **Research and Development (R&D)** model. The method proposed by **Borg and Gall (1983)** as modified by Sugiyono (2015) was followed as outlined in Figure 1. However, due to time constraints, the seventh step is unable to be reported at this time.

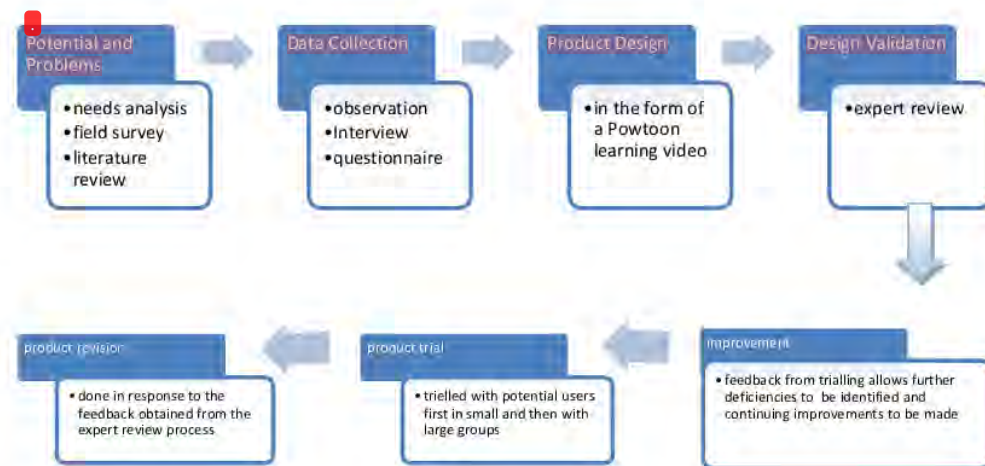


Figure 1. Research and Development Procedures.

## Results

**Identification of potential and problems.** To gather this information, the researchers conducted several activities, namely needs' analysis, field surveys and literature review. In the literature review, support for the feasibility and adoption of the Powtoon software to provide the base for the learning media was found. It was believed that this application could facilitate the learning process because it was a programme that followed current trends. For example, the videos developed using Powtoon could be published through FaceBook, Youtube and other such platforms so that learning could be carried out anywhere and at anytime, not only in the classroom and but also outside the classroom. No longer would students need to rely on their attendance at lectures as a single source for the required knowledge. Further the ability to draw upon visual, audio and animated media increased the potential to accommodate a variety of learning styles. Pre-research and field observations were further conducted to determine the needs of lecturers and students regarding the functionality offered by Powtoon. The features available when compared with other online applications made it an obvious choice for use in developing learning media.

**Data collection.** Field observations were carried out by the researchers by directly observing and interviewing five students in the Faculty of Sports Sciences students who were enrolled in the Anatomy course. Researchers were looking for information relevant to understanding student responses to the current curriculum, learning facilities and learning media. The conclusions drawn from this process were that students felt a little overwhelmed by the implementation of the KKNi curriculum and found the learning facilities provided to be unhelpful. Moreover, students perceived there was a deficit of learning media available that could really help them understand the lessons given. Where learning media was used, it was unattractive and needed updating. Based on the need's analysis and the results of the research and field observations, it was concluded that to address the learning difficulties encountered in the Anatomy courses in the University's Department of Physical Education and Recreation the development of new and improved learning media was required.

**Product design.** Next, the researchers planned the development of Powtoon-based instructional media for the Anatomy courses. Learning videos for the Anatomy course were developed after the following principles:

- Learning scenarios were selected according to the UNIMED curriculum, namely KKNi and developed according to the objectives of learning Anatomy, so that students gain knowledge about body structure and vibration mechanics related to sports.
- Videos were created to illustrate those scenarios
- Evaluation questions were formulated according to indicators and learning objectives
- Indicator: Recognizes the Cranium.
- Evaluation: Specify the types of parts of the Cranium.

The results of the Powtoon-based Sports Anatomy learning media design were the production of the learning videos. Figure 2 provides typical examples of these media.

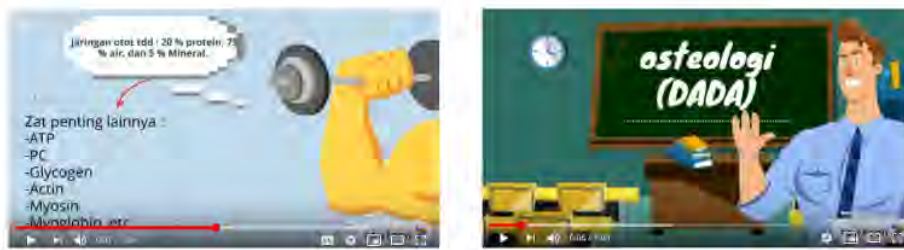


Figure 2. Examples of learning videos that were developed.

**Design validation** After the product had been successfully developed, the next step was to test the feasibility of the media by a process of product validation. Validation sheets were developed and given to three experts in the field of learning media who had previous experience of making / developing many learning media, especially in the field of sports. Feedback was sought on the following aspects, namely: appearance, coloring, letters, images, presentation of material, material accuracy, material coverage, and language. The results are presented in Table 1.

Table 1

Results for phase I of the expert validation process

NO	Aspects rating	Validator			ΣScore	Average of each-Criteria	Percent	Category
		1	2	3				
1	Display	4	3	3	10	3.3	66.7%	Worthy
2	Staining	4	4	3	11	3.7	73.3%	Worthy
3	Alphabet	2	4	3	9	3	60%	Worthy
4	Picture	4	3	4	11	3.7	73.3%	Worthy
5	Presentation of Material	2	3	2	7	2.3	46.7%	Acceptable
6	Material Accuracy	3	3	3	9	3	60%	Worthy
7	Material Coverage	3	3	3	9	3	60%	Worthy
8	Linguistic	3	4	3	10	3.3	66.7%	Worthy
Total					76		63.3%	<b>Worthy</b>

The expert raters used a five-point scale in their assessment of the quality of each aspect. These ratings were then added to provide an average as reported in the table above. Thus, the evaluation of the display produced an average rating score of 3,3 with a percentage of 66.7%. This placed this aspect in the "eligible" category. The average rating achieved across all the aspects was 3.1, ranging from a low of 2.3 for the presentation of the material to a high of 3.7 for the staining and picture. The Presentation of Material aspect obtained an average rating of 2.3 with a percentage of 46.7% putting it into the borderline "acceptable" category. This was because according to the



validators, the appearance of the learning media was still monotonous and lacking in attractiveness.

**Product revision.** Following this initial validation the products were revised. The improvements carried out made use of the advice given as input to revise the initial product design. The revised products were then re-submitted to the expert panel for further evaluation. The results of the stage II validation are presented in table 2.

Table 2

*Results for Phase II of the expert validation process*

N O	Aspects rating	Validator			$\Sigma$ Score	Average of each-Criteria	Percent	Category
		1	2	3				
1	Display	5	4	5	14	4.7	93,3%	Very decent
2	Staining	5	5	4	14	4.7	93,3%	Very decent
3	Alphabet	5	5	5	15	5	100%	Very decent
4	Picture	5	5	4	14	4.7	93,3%	Very decent
5	Presentation of Material	4	4	4	12	4	80%	Very decent
6	Material Accuracy	4	5	5	14	4.7	93,3%	Very decent
7	Material Coverage	5	4	4	13	4.3	86,7%	Very decent
8	Linguistic	5	5	5	15	5	100%	Very decent
Total					Total		92.5%	<b>Very decent</b>

The results show that the assessment of the revised materials reflected a considerable improvement in the quality of the videos produced. The average rating rose from 3.3. The presentation of material still scored the least favourably but had improved its rating from 46.7% to 80% and the alphabet and linguistic aspects were rated at 100%. The average shown in the table above shows that all the criteria were rated highly. The researchers had responded positively and changed all aspects of the media according to the suggestions given by the validators. This included adding colour variations, presenting the material more attractively, using more appropriate language for the discussion of the material and so on.

**Product trial.** The development of the product was now judged to have reached a stage sufficient to move forward to trialling with potential users. The product trials included a small group test and a large group test. These tests were carried out during the learning process. After learning with the Powtoon-based learning media in the Anatomy course, students were then asked to fill in the questionnaire responses.

A small group test was first conducted with five students who were taking the Anatomy course at the university. This test aimed to determine student responses to the portion of the learning media that was initially being developed. The average response

was a value of 4.24 equating to a percentage value of 84.8% which placed the evaluation in the category "very interesting". This result encouraged the development team to proceed to the completion of the entire media package. This was then followed by the administration of a large group test. The result received from this reflected the results of the small group test. Student responses indicated that they were very interested in their learning with the media support. The rankings of the items averaged 4.5 or 90.6%. These results are summarised in table 3.

Table 3

*Small Group and Large Group Test Results*

Average Score Amount	Total Score	Average	Percent	Category
Small Group Test	21,2	4,24	84,8%	Very Interested
Large Group Test	140,5	4,5	90,6%	Very Interested

### Discussion

From the results reported above, it can be concluded that the media was instrumental in increasing the effectiveness of student learning in the classroom. Consistent with the findings of previous research conducted by Anggraini & Khairuradzikin (2016), there were significant differences between students' understanding of the important concepts before and after being taught with the assistance of the instructional media. These results also support the views of researchers such as Suwastarini et al (2015) and Fajar (2017) that the implementation of information and communication technology-based support has a significant impact on student motivation and consequently their learning outcomes.

The successfully developed product that was the focus of this study was a Powtoon-based learning media package in Anatomy. The package contained all the material covered in Arthrology, Myology, Neurology and Osteology. After going through the expert validation stage, where it was judged to be 'very worthy' for the purpose, and being successfully trialled with students taking the anatomy course who declared it 'very interesting', it was believed that there was no need for further revision at this time and so the final step in the research and development model – improvement – was not deemed necessary at this early stage.

### Conclusion

Nurdiansyah et al. (2018) conducted a research entitled Development of Powtoon-Based Learning Media in Citizenship Education Lectures, which stated that Powtoon learning media are not only practical but also have a potential effect in increasing understanding of the material. Ongoing research is needed to confirm this view and to explore the benefits and limitations, if any, of increasing the use of IT based learning media with Indonesian university students. However, on the evidence of this research and development project, it is recommended that lecturers and researchers continue to

work together to develop more media resources to support student learning not just in anatomy but also in other relevant courses.

## References

- Anggereni, S., & Khairurradzikin, K. (2016). Efektivitas pembelajaran menggunakan media pembelajaran macromedia Flash dalam meningkatkan pemahaman konsep fisika materi Hukum Newton. *Jurnal Biotek*, 4(2), 333–350.
- Borg, W. R., & Gall, M. D. (1983). *Educational Research*. London: Longman.
- Chandler, P. (2015). Powtoon: bring awesomeness to your classroom. *Journal The School Librarian*, 63(2).
- Fajar, S. (2017). Pengaruh penggunaan media Powtoon terhadap hasil belajar siswa pada mata pelajaran ilmu pengetahuan sosial terpadu. *Kuasi Eksperimen Terhadap Siswa Kelas VII SMPN 25 Kota Bandung* (Doctoral dissertation, Universitas Pendidikan Indonesia).
- George, C. (2017). Teaching With Technology Toolbox. <https://trgeorge.wordpress.com>
- Hamdan, H. (2018). Industri 4.0: Pengaruh Revolusi Industri Pada Kewirausahaan Demi Kemandirian Ekonomi. *Jurnal Nusantara Aplikasi Manajemen Bisnis*, 3(2), 1–8.
- Martin, M. (2016). *Blending Instruction with Technology: A Blueprint for Teachers to Create Unique, Engaging, and Effective Learning Experiences*. Lanham, MD: Rowman & Littlefield.
- Nurdiansyah, E., El Faisal, E., & Sulkipani, S. (2018). Pengembangan media pembelajaran berbasis PowToon pada perkuliahan Pendidikan Kewarganegaraan. *Jurnal Civics: Media Kajian Kewarganegaraan*, 15(1), 1–8.
- Rasyid, H. (2015). Membangun Generasi Melalui Pendidikan Sebagai Investasi Masa Depan. *Jurnal Pendidikan Anak*, 4(1).
- Sugiyono, M. (2015). *Penelitian & pengembangan (Research and Development/R&D)*. Bandung: Penerbit Alfabeta.
- Suwastarini, N. N., Dantes, D. N., Candiasa, D. I. M., & Komp, M. I. (2015). Pengaruh Implementasi Pembelajaran Berbasis Media Teknologi Informasi dan Komunikasi terhadap Motivasi dan Hasil Belajar Matematika Siswa Sdlb B (Tuna Rungu) pada Slb B Negeri Ptn Jimbaran. *Jurnal Penelitian dan Evaluasi pendidikan Indonesia*, 5(1).



# Developing IT-based learning media in sports anatomy

---

## ORIGINALITY REPORT

---

5%

SIMILARITY INDEX

5%

INTERNET SOURCES

1%

PUBLICATIONS

0%

STUDENT PAPERS

---

## MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

---

1%

★ [primary.ejournal.unri.ac.id](http://primary.ejournal.unri.ac.id)

Internet Source

---

Exclude quotes Off

Exclude matches Off

Exclude bibliography On