Original Research Article

Use of Animation in Classrooms at Higher Learning Institutions: Student Perception

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Abstract: The integration of animation in higher learning institutions' teaching and learning process has become apparent as contemporary instructional materials are paramount to ensuring quality education. The current study aims to identify the students' perceptions of Animation in their learning environment in higher learning institutions in Malaysia. The researchers administered an online survey via Google form to a total of 275 undergraduates. Data elicited from the respondents were analyzed using a quantitative research approach. The findings indicated that most of the undergraduates had shown interest in using Animation in their classroom teaching and learning activities due to its effectiveness in facilitating learning. They found animations to be an efficient way to deliver and disseminate information, thus making their education more stimulating besides enhancing their knowledge of computer skills. The respondents further indicated that animation helped them understand a complex concept easily and made their presentations more appealing. Conversely, it was time-consuming for students to create the simplest animation. Besides, too much Animation on the page can be distracting. This study concludes with an overall discussion and recommendations for further study.
Keywords: Animation, classrooms, creative, interesting, time-consuming.

INTRODUCTION

The evolution of technology allows for a broader range of learning in a more interactive environment for students (Dincer, 2017). Technology rejuvenates the learning environment by contributing to the development of instructional plans by creating various delivery methods to enable students to learn in multiple ways (Arumugam *et al.,* 2020; Bai, 2018; Shute, 2017; Shanthi, 2019). With the increasing sophistication of technology, we can see the number of multimedia technologies such as text, graphics, sound, and Animation being implemented in educational environments at a grander scale.

Animation makes moving images out of still pictures (Musa, Ziatdinov, & Griffiths, 2013). For learners, animations enhance their learning experiences by providing visuals, sound, and engagement (Soffar, 2016). As a result, learning outcomes are more optimistic. Besides, Animation assists students in alleviating the cognitive representations of concepts, phenomena, and processes and replacing arduous psychological feature processes (Bellei *et al.,* 2016). In the academic field, Animation also stimulates the students' cognitive function. Even instructors can describe the instruction more clearly as they can use Animation to explain it to others (Desai, 2018).

BACKGROUND OF THE STUDY

Shabiralyani (2015) and Arumugam *et al.,* (2021) advocated that 40% of students are visual learners, preferring to be taught through diagrams, pictures, charts, flow, films, and demonstrations. Despite these facts, most marketing instruction for learning relies heavily on verbal cues such as written or spoken words. Bedrina (2016) and Arumugam *et al.,* (2021) tressed that the old teaching method might still be helpful. Still, the new and modern teaching method would offer a more interactive way of learning and a more comprehensive option for educators to engage in the teaching process.

Johnson (2015) further reiterates that animations will make abstract concepts easier to learn along with graphics and replace standard and traditional teaching methods. Animation is the act of creating a scenario using many moving pictures. Animations are created by linking consecutive pictures. Animations are not only restricted to learning alone, but most of the complex concepts around us also use Animation to explain (Akpinar, 2014). Animations are so extensively used that people now believe that complex ideas can be understood without difficulty. This is to say that the teaching and learning process has now become much more interactive with the application of Animation (Kuchimanchi, 2013).

Animation in Classroom

In teaching and learning, Animation is one of the effective tools that can be used. Research conducted at a university in Hong Kong found that 95% of teachers understood assessment rubrics better after watching animations (Chan, 2015). Ismail (2017), in his research, revealed that including Animation in a classroom can stimulate and encourage students to engage in the learning process. Luzon and Leton (2015) concurred with this. They added that if Animation is used correctly, it will provide a learning environment that will help learners to concentrate better, as animations are an efficient way to convey information in the classroom.

When students watch an animation, they will see the character's body language, hear the tone that correlates with the body language and observe the expression (Vargo, 2017). Students will understand the information easily by observing or watching the movement of the characters, environment, appearance, and the intended message. Besides assisting students in visually appealing presentations, Animation can also be advantageous to classroom instructors (Bates, 2018). There are opportunities for students and teachers to collaborate in other parts of the world through Animation, which should not be underestimated. According to Green (2016), with Animation, one can easily overcome language barriers. For example, via Animation, instructors can visually demonstrate things and concepts as they want (Desai, 2018). The current generation of students has grown up with technology and lives in a world where digital technology is part of their daily existence (Desai, 2018). As such, Animation works as a tool that can encourage students to express themselves creatively.

Undergraduates from Universiti Kebangsaan Malaysia stated that the development of online mobile applications had motivated them positively by encouraging the instructors to include more and more animations in their teaching (Mustafa, 2018). With the existence of this application, students can now reach out to their lecturers to prepare themselves for upcoming lectures. The recent Covid 19 pandemic attack forced many instructors to start familiarizing themselves with Animation within the teaching and learning context (Shirin, 2020). In the absence of face-to-face learning, this method has proved valuable and effective in conveying information virtually.

Additionally, Bates (2018) advocates that Animation is a brilliant and innovative way to encourage students to communicate stories, ideas, and concepts creatively and originally. Bates also stresses that Animation can be beneficial in enhancing the creativity of students who often find grammar a challenge when learning. This is because it liberates them from worrying about technicalities and enables them to concentrate on the story instead. It also helps students develop storytelling skills in the learning process (Desai, 2018). Teachers can incorporate animation as an interactive system for different subjects of various locations. Regardless of where the students are, they will continue to learn and improve themselves as long as they have access to the animated learning figures. This also allows them to be advanced at their pace (Peter, 2016). Under these circumstances, students with multimedia access to learning can understand better than students who learn using the traditional textbook style (Chioran, 2016).

While some studies have noted the benefits of using Animation, other studies yielded contradictory results; Layo (2018) opined Animation is a time and effort-consuming activity. As impressive as animations and animated infographics are, it requires a particular set of skills to create. In addition, Layo added that one has also to purchase expensive software in many situations, which can also be problematic. Additionally, Shareef (2012) argued that using Animation requires

extensive memory and storage space as it consists of a moving image. Dina (2012) also agrees that Animation improves students' learning process. Thus, it is crucial to elicit students' perceptions of the benefits of Animation in the classroom.

Statement of the Problem

Animation is the art of drawing movement, which includes 2D Animation, 3D Animation, or stop-motion animation (Antle, 2018). Kuchimanchi (2013) explained that animations could help students to understand complex ideas more easily as "concentration" will stand out to be the primary criterion for better learning, followed by "understanding" and finally, "remembering."All these go hand in hand. Animation is used in the learning process; it requires reading the text and watching the Animation. The viewers must split their attention as they cannot attend to both readings and watching movement simultaneously (Malamed, 2016). Despite the negative consequences of using animations (Shareef, 2012; Dina, 2012; Soffar, 2016; Layo, 2018), most Animation users have found the application helpful, particularly in teaching and learning contexts. However, research investigating the students' perceptions of Animation for learning purposes at higher learning institutions has not been much explored. Therefore, this study aims to address the gap and find a solution for a better learning environment by addressing the following research questions:

1. What are the students' perceptions of Animation in the learning process at higher learning institutions?
2. How does the use of animation help in the learning process?

METHODOLOGY

This study employed a quantitative approach in which a set of questionnaires adapted from Arumugam, Selvanayagam, and Sathiyasenan (2020) was used as the prime instrument to collect the data, and structured interviews were carried out with seven random respondents to triangulate the findings. The questionnaire includes items that aim to obtain information on students' perceptions of Animation, its benefits, its associated problems, and how animations relate to them. Questionnaires were distributed randomly to 275 respondents from private and public higher learning institutions in Klang Valley, Negeri Sembilan, and Melaka. The questionnaires were in the form of online Google Forms, distributed via link and WhatsApp. This study used descriptive analysis in analyzing the data. The analyzed data were converted from frequency count into percentages and presented in charts outlined using the Google Drive application.

The questionnaire consisted of three parts. Firstly, Part A elicited information about the respondents' demographic profiles. At the same time, Part B aimed to gather information related to students' perception of animation usage at higher learning institutions. Lastly, Part C dealt with students' experience using Animation in learning. Eight undergraduates (R1, R2. etc.) were randomly selected for semi-structured interviews to triangulate the survey responses. As for analysis, strongly agree and agree responses have been concerted as agree, while strongly disagree and disagree have been integrated as disagree.

More than half (60%) of the respondents were females, and (40%) were males. Most respondents (78.7%) are between 20 and 23 years old, followed by 12% of the 24-25 age groups. Only 6.7% are below 19 years old, and a smaller percentage (2.6%) are 26 years old and above. A total of 57.3% of respondents are from Universiti Teknologi MARA (UiTM), 13.3% from Kolej Universiti Islam Antarabangsa Selangor (KUIS), followed by Universiti Kuala Lumpur Malaysian Institute of Industrial Technology (UniKL MITEC) with 7.6% of respondents. 4% of respondents are studying at Politeknik. Universiti Tunku Abdul Rahman (UTAR), Kuala Lumpur Metropolitan University College, Universiti Tun Hussein Onn Malaysia (UTHM), and INTI International College Subang share the same amount with 2.7% of respondents. Lastly, the least amount with only 1.3% of respondents are from Kolej Universiti Islam Melaka (KUIM), Kolej Professional Mara Indera Mahkota, Multimedia University (MMU), Universiti Teknikal Malaysia Melaka (UTeM), UNITAR International University and Institute Latihan Perindustrian Kuala Lumpur.

RESULTS AND DISCUSSIONS
Student Perception towards Animation in Learning Process

Green (2016) believes that animations create opportunities for students and teachers to collaborate in other parts of the world, and it is a mode of subduing language barriers. It is also agreed that the students are more digital savvy and animations function as a tool that encourages them to express themselves creatively (Desai, 2018).

Table 1: Students' Perception towards Animations in Learning Process

No.	Item	Agree (%)	Uncertain (%)	Disagree (%)
1	The usage of Animation helps me to get information quickly	78.7	8.1	13.2
2	I feel committed to learning by using Animation.	85.5	7.9	6.6
3	There is a lack of immediate feedback from lecturers and friends when learning to use Animation	58.5	6.6	34.7
4	I frequently use Animation in daily life	64.0	2.0	34.0
5	I believe that using Animation helps to increase my computer skills (e.g., searching for information, browsing the World Wide Web, using slides show, uploading video and audio, etc.)	97.4	1.3	1.3
6	Animation provides multiple pathways using text, graphics, audio, video, or Animation for non-linear learning styles	96	2.7	1.3
7	The usage of animation software affects me financially (buying expensive software, Internet data, etc.)	82.6	2.7	1.3
8	Animation distracts me from doing other work by taking my time	96.1	1.1	2.8
9	The usage of animation software affects me in the limitation of resources	68	1.3	30.7
10	I face problems such as frequent breakdown of technology when I use Animation to study (e.g., hardware, software, website, and network.)	82.6	1.3	22.7

Table 1 shows that most students (78.7%) agree that using Animation helps them get information quickly, while 21.3% strongly agree with the statement. This result is in line with Desai (2018), who explained that abstract concepts in science could be used to show how the solar system works. In math, computer animation can show a student how one can algebraically manipulate a specific equation. Most of the respondents, 85.5%, admitted they are committed to learning using Animation. A nominal number, 7.9%, indicated that they are not sure of their stand, while 6.6% disagree that learning through Animation will make them committed to learning.

In the semi-structured interview, the respondents shared that Animation enhances the ability to keep them engaged and committed in classroom activities. R4, the most preferred response in this theme was the ability to engage them in classroom teaching and learning. She added, "I liked having animated work, be it videos or presentations, as reading plain print materials, and e-book takes longer to understand a particular concept." This finding is consistent with Soffar (2016) that computer animation programs may function well from a technical point of view.

Next, 58.7% agree that there is a lack of immediate feedback from lecturers and friends when learning using Animation, while 34.7% of the respondents disagree with the statement. A small number of respondents (6.7%) were unaware of the situation. It should be noted that there is a high possibility that students face difficulties in gaining instant responses from instructors and other friends through the usage of Animation in their learning process based on the result. This finding contradicts Mustafa's (2018) findings which reported that students from Universiti Kebangsaan Malaysia found

using Animation online helpful in reaching out to their lecturers, especially in preparing themselves for upcoming lectures. Using Animation can help students get instant information and be committed to learning. Animations have certainly proved themselves to be effective in conveying in the classroom.

The findings further indicate that most students (64%) agree that they frequently use Animation in their daily routine. This shows that Animation has now become a norm in students' lives. Desai (2018) and Perinpasingam *et al.,* (2014) also said that students have grown up with technology and live in a world where digital technology is part of their daily existence. However, quite a number of the respondents (34.7%) perceived otherwise. This could be due to lack of internet facility.

Many respondents (97.4%) agreed that they improved their computer skills through Animation. This is to say that using Animation in the learning process has been helpful to the students in developing better computer skills. Presentation skills are fundamental as they put information into better points of view and can connect visually with others. R7 said, "Using Animation has improved my computer skills. I did not attend any formal classes to learn Animation. I learned via the internet. While learning Animation, I have learned other computer skills like creating short videos, drawing animated images and diagrams for other subjects too." People with great ideas but who don't know how to present them to an audience are pretty much the same as those without great ideas. In other words, through Animation, students can conveniently present their goals to the public (Miller, 2017).

Additionally, 96% of the respondents agree that Animation benefits them in providing multiple pathways such as text, graphics, audio, video, or Animation for non-linear learning styles, of which 49.3% of the respondents have shown their agreement. This attests that using Animation in classroom learning is a one-stop destination to learn creatively. 82.6% of the respondents agree that animation software affects them financially. In comparison, 14.7% disagree that usage of animation software affects the respondent financially as they need to purchase expensive software, internet data, etc. A total of 2.8% of the respondents have said that Animation does not divert their concentration. However, this is not the case for most of the respondents. R5 echoed this as he shared that they need to buy specific software and program, and they are charged in USD, which is very expensive. So, he learned Animation in a complex way through YouTube. However, some of them learned Animation through YouTube and saved their allowances.

When asked if using Animation affects the students from doing other work, 68% agreed to the item. 96.1% agreed that Animation distracts them from doing other work since creating Animation is time-consuming. This is in line with Soffar (2016), who mentioned that too much information stated on the page could be distracting. Soffar also indicated that Animation, from a technical point of view, may function well, but it is sometimes hard to fit into different levels of students.

Other than that, 82.6% of the respondents agree that they face problems during their studies due to frequent technical breakdowns (e.g., hardware, software, website, and network). In contrast, 22.7% disagree with having a problem or research technologies when using Animation for their studies. This finding shows that using animation software does not affect students from a limitation of resources as a whole. Since it can incorporate animation in teaching different subjects from various locations, it offers students the opportunity to be technologically advanced (Peter, 2016). This shows a high number of those who agree that they face problems such as frequent breakdown of technology when using Animation to study. The undergraduates indicated that there is a high possibility that they face difficulties in gaining instant responses from instructors and other friends through the usage of Animation in their learning process. In general, using Animation has given many benefits to students for their learning environment and increased students' computer skills. Chioran (2016) also stated that students could identify and solve problems more efficiently in multimedia learning environments than in the scenario where textbooks make teaching possible only. In short, although Animation takes a lot of effort and time to create even the simplest Animation, it is apparent that most undergraduates improved their computer skills by using Animation.

The following section presents data from research question two, which is about the benefits of using Animation in the learning process at higher learning institutions.

Benefits of Using Animation in the Learning Process

Animation provides an exciting and dynamic platform to encourage students to give attractive, engaging class presentations. It is a great way to encourage students to put more effort into their presentations, making slideshows, visual explanations of concepts, and visually connecting with their audience, which is an excellent skill for the future (Bates, 2018).

Table 2: Impact of Using Animation in Learning

No	Question	Agree (%)	Uncertain (%)	Disagree (%)
1.	I can understand complex concepts through multimedia elements such as video, audio, graphics, and Animation.	74.7	10.7	14.7
2.	I can use applications such as PowerPoint for learning purposes.	89.0	9.3	2.7
3.	I can use various applications to do assignments, research, and projects.	85.4	9.3	5.3
4.	Animation in the learning process helps to improve my cognitive skill.	85.4	6.7	8.0
5.	Animation improves my learning skills (speaking, listening & writing.)	80.0	8.0	12.0
6	Video materials can improve my learning.	85.3	4.0	10.7
7	Animation helps me engage actively in my learning.	84.0	5.3	10.7
8	Animation makes studying easier for me.	84.0	6.7	9.3
9	Animation helps me a lot in terms of study.	85.4	5.3	9.3
10	Using Animation in the classroom is better than traditional learning.	74.7	9.3	16.0

Table 2 shows that 74.7% of students agree that using Animation in learning helps them understand complex concepts using multimedia elements such as video, audio, graphics, and Animation. Chan (2015) concurs with this, as his study reported that by using Animation, instructors could better understand assessment rubrics. Instructors can use Animation such as *Google forms*

to calculate students' test scores. R3 shared that "certainly inclusive of Animation makes classroom presentation interesting. The use of multimedia and video animation motivates me to grasp the learning outcomes and enriches my understanding." Animation created clear visualizations for students to understand any abstract concepts. Abdul Razak and Abdul Rahman (2013) concur with this thought that using pictures, graphs, diagrams, videos, and demonstrations helps especially visual students.

Next, 89% of the respondents agree that Animation helps improve their ability to use applications such as PowerPoint for learning purposes. 85.4% agreed that Animation assists them in using various applications to do assignments and research and helps to improve their cognitive skills. This was also decided (Green, 2016) that Animation can teach students various vital computer skills. Meanwhile, 80% of the respondents agree that Animation in the learning process helps to improve their speaking, listening, and writing skills. A study by Bates (2018) found that Animation can be an exciting and dynamic platform for students. It not only can help students to think creatively but improve their learning skills through the use of multimedia elements. Moreover, Bates (2018) stated that students become more interested and creative in-class presentations.

As a result, 85.3% of the respondents agree that video materials can improve their learning and 84% agree that Animation can engage them actively in learning. This finding is further supported by Kuchimanchi (2013), who stated that humans have an excellent photographic memory; the more you look at it, the better the information is stored. Next, 84% said that Animation facilitates their learning easily. "Use of Animation assists my friends and me to learn quickly. This also helps us to remember the content and hastens our understanding. The animated presentation is attractive and enjoyable. Learning is fun filed through Animation."

"I am from the Architecture faculty. When my lecturer uses animated video or presentation showing us the steps in planning, it gives us a good visualization of how we need to plan our projects."

This is in line with Desai (2018), who stressed that Animation is extremely helpful in the classroom as an explanation and understandable. Besides, using Animation, instructors can demonstrate things and concepts visually as they want to.

85.4% of the respondents shared that Animation helps them in terms of study, while 74.7% felt that using Animation in the classroom is better than traditional learning. In short, students in higher learning institutions perceived Animation to be stimulating and keep them engaged in the learning process. This finding corroborates with Chioran (2016), which stresses that animation is better than traditional learning regardless of the subjects in the multimedia learning environment. R1 shared that "The animated class notes excite my classmates and me. When we have a class presentation, I prefer to use Animation because my classmates pay more attention and engage well. This gives me more marks as I can hold my audience's attention. But I must admit that it takes more time to prepare than any PowerPoint slides". This is in line with Abdul Razak and Abdul Rahman (2013), who claimed that using pictures, graphs, diagrams, videos, and demonstrations helps visual students.

Overall, using Animation is an effective way for students to get a wide range and in-depth information easily and quickly through visual platforms. Chioran (2016) advocated that much of the human brain dedicates itself to visual processing. Thus, students can identify and solve problems more effortlessly in a multimedia learning environment compared to using textbooks and the chalk-and-talk approach.

Although respondents shared that integrating Animation in the classroom lacks immediate response from friends and lecturers and may pose some form of distraction, it is still widely used among students. Plus, students have grown up with technology and live in a world where digital technology is part of the texture of their daily existence (Desai, 2018). Hence, applying Animation in the learning process among students at higher learning institutions provides more benefits than weaknesses.

Animation provides important roles for play and control when working with self-representation and time. It revealed that animation is an excellent way to present information. With the help of an animation, students would engage actively in learning. It can be concluded that students prefer watching instead of reading books in the classroom. With Animation, undergraduates can transform their learning methods into more productive and efficient in the future (Maya, 2019). To sum up, using Animation is an effective way of helping students to develop their learning skills.

RECOMMENDATIONS
Based on the information and findings of this study, the following recommendations are made for future improvements:

The animation should be used widely in the teaching and learning process regardless of different

levels of education, be it in primary school or higher learning institutions. It is recommended to be taught in all universities as a part of their course syllabus to fulfill the demand of today's digital era. However, educators should expose animation to students early to quickly adapt to the new media learning methods. The early exposure will enable them to use Animation with ease in their presentation, such as PowerPoint, Prezi, and Powtoon because it is an exciting way to express their content through visual representation and a way to attract the audience. On the other hand, educators should also be skilled in the field of Animation so that students do not feel bored learning throughout the day as animation elements such as slides, videos, pictures, and many more have been incorporated.

THE IMPLICATION OF THE STUDY

This study would benefit curriculum designers and students in higher learning institutions by including Animation in the university syllabus. The learning process by using Animation could spare a lot of time rather than reading long paragraphs of texts in books. As animation programs can be saved as a soft copy, they can create many learning materials, such as animation videos, regardless of the subjects. This approach will meet the needs of Gen X and Z, which progressively makes autonomous learners. Finally, including Animation in the syllabus can enhance students' creativity in presentations. Thus, students could learn more effectively with the help of Animation. Although the animation program brings plenty of benefits, further research needs to be done on how our country should implement this idea and the readiness of the instructors to embrace this software.

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