

# IMPACT OF TECHNOLOGY AND SOLUTIONS FOR EFFECTIVE CONCEPTS DEVELOPMENT IN ANIMATION CLASSROOMS

**ZAIN SHAKEEL \***

Lecturer, Department of Arts & Media, Foundation University Islamabad. \*Corresponding Author

**SIDRA ASHRAF**

Assistant Professor, In-charge, Department of Computer Arts, Institute of Visual Arts & Design, Fatima Jinnah University Rawalpindi.

## Abstract

This study focused on the impacts of software and hardware advancements on teaching pedagogies in animation classrooms and how animation teachers change their teaching pedagogies to handle animation students' queries in the latest technological era. Moreover, this research looked into effective concept development of Foundation University animation students by focusing on culture and advanced technologies. This study addressed the literature gaps of animation teaching methodologies and animation classroom environment. Research data was collected using non-probability purposive sampling technique through in-depth interviews from animation teachers from various universities and conducted online google survey from undergraduate animation undergrads of Foundation University. Five-day workshop on the impact of course content for effective content development was conducted and recorded, which showed that the research concluded its purpose and showed significant results. Finally, the study concludes that animated content produced should be saved and uploaded on university digital repository & social platforms, which will benefit the students and the Foundation University.

**Keywords:** Advancement in Software and Hardware, Teaching Pedagogy, Animation Studio Teaching, Digital Technology, Learners Conceptual Knowledge.

## INTRODUCTION

I have been a part of the education system since 2016, meanwhile I have also worked in multiple animation studios. This has helped me in improving the existing teaching philosophy in the animation course content and classroom. The area that I have chosen for my research is due to my diverse educational background of Bachelors Computer Sciences and Masters in Multimedia Arts. My teaching experience in Computer Arts degree with Foundation University, Fatima Jinnah Women University and National College of Arts motivated me in driving my research question. As a facilitator for more than 6 years of teaching animation courses. I have observed that my students use artificial intelligence apps and engines to complete their animation assignments. They are more focused on creating end products rather than concept building. Their animation projects are conceptually weak, which in my perspective is a serious obstacle to the core of animation concepts and rules. With the increasing influence of software and hardware growing in the classroom, it's becoming more vital to evaluate this shift to see if the new technology is being used properly and providing the desired results (Furr, Ragsdale, &

Horton, 2005). Animation teachers must create a more versatile curriculum which focuses on the students' abilities to think and practice basic animation concepts more intellectually while utilizing the latest software/hardware.

### **Problem Statement**

Today, software and hardware development is progressing at a rapid pace. It has become vital for animation teachers to incorporate new software and hardware innovations into their curriculum. Advanced software and hardware are changing the classroom environment and students' ability to think in the field of animation. Students are making animation projects with exceeding reliance on technology while lacking the skill to produce and develop effective concepts and refined ideas for their projects. As a result, animation teachers need to evolve and adapt to the latest technology with time.

### **Research Question**

How has advancement in computer software and hardware development impacted the pedagogy in animation classrooms of Rawalpindi & Islamabad Universities and in what ways can Animation students of Foundation University overcome issues of effective concept development while using such technology?

### **Purpose of the Study**

The purpose of this study was to observe the pedagogy of animation teachers of Rawalpindi & Islamabad Universities and to examine how they will adapt the advancement in computer software and hardware development for intellectual learning outcomes among their students. The study investigated ways for effective conceptual development of Animation, to figure out new approaches to formulate the teaching practices and curriculum of the Computer Arts Department at Foundation University School of Science and Technology Rawalpindi.

### **Type of Study**

The study used qualitative research approach, where interviews were conducted of animation teachers from Foundation University School of Science and Technology Rawalpindi (FUSST), Fatima Jinnah Women University Rawalpindi (FJWU), Hamdard University Islamabad (HU) and Comsats University Islamabad (CUI). Survey Questions were asked from students from aforementioned universities. The curriculum of FUSST and FJWU animation courses was analyzed in detail to see how software and hardware advancements impacted their students and animation studio classes.

### **Significance/ Rationale**

The significance of study was to look into the teaching methodology of animation teachers and issues that hinder between animation teachers and students' work due to software hardware advancements. Secondly the study has also proposed suitable solutions of

existing problems. Furthermore, if any new courses are introduced related to students' ability to focus more on the conceptualization of animation projects. This should allow students to become adept in using more professional software and hardware available in the animation industry.

## **LITERATURE REVIEW**

In this chapter, various studies were reviewed in literature that were produced by research scholars in the related field to my research and enabled me to connect the dots to understand issues from a diversified viewpoint. This helped in identifying the adoption of advanced software and hardware development by animation teachers for intellectual learning outcomes and effective conceptual development among their students in Rawalpindi and Islamabad Universities.

### **Pedagogy with Technology Integration**

The studio classroom is a space where students acquire skills, gain information, and implement what they have learned into practice. In addition, animation studios provide a creative environment to students for exploration and experimentation with techniques that demand attitudes, which impact learning. This is where the concept of technology integration with educational practice emerges within the realm of animation. Therefore, technology integration is an integral part for pedagogy, not a shelf tool, because it helps both teachers and students in teaching and learning lessons in the classroom (Furr, Ragsdale, Horton, 2005). Animation is a skill base field; therefore, the depth of technology integration has been analyzed in order to establish its correlation with teaching methodology. When teaching animation, it is important to keep in mind that technology is an integral element of the educational process, not an add-on that may be included at any point throughout the course of learning. According to Lever-Dufiy, McDonald, and Mizeli (2011) "educators may take a narrower view and are likely to confine educational technology primarily to computers, computer peripherals and related software used for teaching and learning". Therefore, it is not limited to the mechanical use of many advanced computer hardware and software equipment in an animation studio throughout the teaching process. It must contain skill to demonstrate, abilities to evaluate, techniques to customize the use and selecting the desired animation software and hardware, in a way that confronts instructional issues.

Diaz & Bontembal (2000) stated that understanding of pedagogical principles are the key concept required in using technology to enhance the educational process. In contrast to the previous study, another research conducted by Aligarh Muslim University posits that using technology does not only include use of software and hardware independently, but also integrates key concepts of pedagogical philosophies through interactive exercises and integrated lesson plans that are specific to the use of technology in teaching

environments (Khan, 2018). Therefore, the selection and usage of animation software and hardware for teaching purposes should be made at the beginning while preparing lesson plans for instruction, not in the middle or at the end of the studio class session.

Meanwhile, a study by Okojie, Olinzock & Okojie in 2006 hypothesized that integrating advancements of technology in lesson plans and teaching methodologies will further increase the quality of education. This can be done when a teacher understands his learners and knows more about software and hardware with the latest trends regarding the animation field. “Bosch & Cardinale (1993) maintain that while it is important for teachers to be provided with technological skill, it is also important to educate them on how to use that skill to support learning.” Therefore, the instructor should also think about how the technology chosen fits into the lesson's goal, teaching strategies, assessment, evaluation, and future plans.

### **Critical Thinking and Creativity**

Examination of the connection between technological learning and animation pedagogy, teachers and learners will have to think critically as they implement technology integration in their animation work. Therefore, critical thinking entails identifying our views, behaviors and assumptions. Our thoughts and actions are justified. We assess the reasonableness of these justifications. (Mezirow, 1990). With the integration of software and hardware development in pedagogical critical thinking, progressiveness and appropriate learning will develop in learners (Ismajli, Hatixhe, Bytyqi-Damoni, Arlinda, Shatri, Kyvete, Ozogul & Gamze, 2020). We can also increase critical thinking among learners through these four approaches in digital arts: collaboration, appropriation, the open-source movement, and intervention to develop new curricula for accepting new technology in teaching (Freire & McCarthy 2014). Therefore, integration of relevant subjects' knowledge through pedagogy increases critical thinking, including important material from other fields through which students are able to learn and rethink knowledge in a creative process that incorporates other subject knowledge, concepts, ability, and new objectives in the core subject of animation. Educational researchers found that an integrated curriculum can increase intellectual curiosity, school attitude, problem-solving abilities, and college accomplishment. Integrated curricular knowledge enhances student creativity in generating visual material for any culture. (Austin, Hirstein, & Walen, 1997).

Throughout the studies conducted on visual culture, art teachers in the 21st century are responsible for educating learners about the intentional and aesthetic use of advanced technology, technique and creativity. (Duncum, 2001). Here we can understand creativity as a self-understanding, intuition, and decision within the restrictions of some context and its means (Slocombe, 2000). Whereas technology and technique are interlinked with each other through ‘techne’ meaning craft/skill, which when taught combinedly definitely increases the thinking process (Webster, 1993). To enhance creativity, art teachers

should provide enough guidance to learners that requires gratifying enthusiasm but avoiding overloading of knowledge that might disrupt their initial aim for their artwork (D'Amico, 1953). Koehler, Mishra and Cain in 2013, defines 21st century skills framework into context of 3 parts; technology, content and pedagogy and concludes that three bodies aforementioned are required for successful implementation of new technology in pedagogies. Technological Pedagogical Content Knowledge (TPACK) framework assists animation teachers for integration of technology in animation and design pedagogy in the 21st century classroom.

### **Culture and Idea Development**

To know one's Culture, history and norms is as important as knowledge of how animation engines work. That is why animation teachers need to emphasize to students to define culture itself. (Goldbard, 2006).

Besides art and literature, culture includes ways of life, values, customs, and beliefs; all of which contribute to a society's or a group's unique spiritual, material, intellectual, and emotional characteristics. (Rankin, Hansteen-Izora, Packer, 2006).

But today students lack an understanding of their own cultural histories, contemporary values, and cherished customs. Our sole hope for cultural survival is in this direction. A tradition is the future that was made from the past. It's a choice and it takes time. (Glassie, 1995).

The animation teacher's pedagogy needs to be focused on developing Culture-based animation ideas. So, future animations will have the potential to be a source of cultural information and education for local audiences. Social Cultural Animation encompasses a wide range of social practices, and definitions of the idea are based on a variety of experiences and perspectives. As a result, Gillet refers to the definition of sociocultural animation as "impossible to find." (Gillet, 1995)

By embedding a subject of cultural studies in the art and design department, we train our students to produce creative ideas in animation. For animation, practice of tools is not the only way to achieve success.

Practice can help to construct theory, while theory helps to support practices. Cardia Gomez (Gomez, 2004) analyzed the role of paradigms in Socio-Cultural Analysis in this frame of mind. This paradigm is based on three basic principles that influence theory development:

1. One pretends to maintain reality in its current state.
2. Another examines social change through the lens of human interactions. By focusing on knowledge and accountability.
3. The third confronts power and its socioeconomic institutions.

Stories are crucial for keeping the cycle of creation going and for keeping us alive as cultural beings.

The art of storytelling lies at the heart of cultural survival. The recounting of our stories brings about inward discovery as well as external intimacy.

It is a way for us to connect, as well as a means of handing down hand-crafted and heart-crafted legacies (Dyson, 1994).

## **METHOD OF RESEARCH**

This chapter covered several approaches that were performed in the data collection and analysis for the research. These approaches elaborate the type of the study, setting, participants, procedure, data collection and data analysis.

### **Type of Study**

This study was based on a qualitative research approach which includes concepts, ideas, themes, subthemes and pedagogies to teach and learn animation key concepts with the use of advanced software and hardware. Hence qualitative research methods were used.

### **Research Design**

The research design of this study was divided into two phases. In Phase 1, all the data was collected through interviews, survey forms and in-depth curriculum analysis and after analyzing and comparing all the data, a course outline with detailed lesson plans (Appendix 1) was designed for the Computer Arts Curriculum of FUSST. In the Phase 2, the course/workshop was conducted with students of Computer Arts at FUSST and data was collected from this experiment and analyzed. The course plan will be pitched to the university to be implemented based on the finding of the course/workshop in future semesters.

### **Setting**

The study has been conducted in the following Universities in Rawalpindi & Islamabad:

1. Foundation University School of Science and Technology Rawalpindi.
2. Fatima Jinnah Women University Rawalpindi.
3. Hamdard University Rawalpindi.
4. Comsats University Islamabad.

### **Participants of the Study**

All participants selected for interviews were full-time employees at universities occupying positions as Lecturers and Assistant Professors teaching animation classes. Participants' information is given below in Table 1.

**Table 1: List of Faculty Participants Included in the Study**

S no.	Gender	Designation	University	Teaching Experience	Professional Experience	Date of interview
Inter-viewee 1	Male	Lecturer (Animation)	Foundation University of Science and Technology Rawalpindi	8 years	15 Years	25th November 2022
Inter-viewee 2	Female	Lecturer (Animation)	Fatima Jinnah Women University Rawalpindi	7 Years	2 Years	29nd November 2022
Inter-viewee 3	Male	Lecturer (Animation)	Hamdard University Islamabad	3 Years	5 Years	08rd December 2022
Inter-viewee 4	Male	Assistant Professor (Animation)	Comsats University Islamabad	8 Years	7 Years	19th December 2022

All participant data was collected between the months of November and December 2022. A complete consent form (Appendix 2) was obtained from each participant.

### List of Student Demographics

Data was also collected from animation students through a survey questionnaire (Appendix 3). All these participants were students of those teachers whose interviews were conducted. This study used non-probability purposive sampling technique to collect data from animation students. Table 2 shows the students' semester wise respondents.

**Table 2: List of Student Demographics Included in the Study**

Sr. no.	Students Semester	Department	University	No. of students participated
1	7th	BCA	Foundation University School of Science and Technology Rawalpindi	17
2	6th	BCA	Fatima Jinnah Women University Rawalpindi	16
3	5th	BCA	Hamdard University Islamabad	6
4	6th	Design	Comsats University Islamabad	10

### Course Conduction

To test run the course outline of Idea Development and scriptwriting a one-week workshop has been conducted with Foundation University Students which was audio/video recorded.

The details of participants is shown in Table 3

**Table 3: Student Survey in Foundation University**

Semester	Department	University	No. of lessons conducted	Total no. of Students
6th	Computer Arts	Foundation University School of Science and Technology Rawalpindi	5	10

**Procedure**

This research was based on a qualitative approach, the methods used in this study to collect data which will further be analyzed and compared to find the best possible results to complete research. For this interview data and course/workshop was Audio/Video tape recorded, survey questionnaire and in-depth curriculum analysis. As a researcher, my role was participant and observer during the conduction of course.

**Data Collection**

For data collection, I have collected the data through interviews and survey questions. Interviews have been taken from animation teachers. The data collection method helped me in finding about the feelings, opinions, behavior, experiences, passion and in-depth knowledge about the animation field through open-ended questions that were asked from the animation teachers. Semi structured interviews (Appendix 3) were conducted from all animation teachers to gather maximum information from the interviewees. Each interview ran for a duration of approximately 45 minutes and these interviews were conducted over a period of two months. To ensure the reliability and validity of data all the interviews are audio/video taped.

Online survey question method was used using google forms to collect data from students of animation teachers who were interviewed. This method allowed me to narrow down the respondents

**Data Analysis**

After interviews were conducted, they were transcribed and from these transcripts, themes were derived which were color coded for analysis and comparison of the data. Students' survey data was collected via google forms and converted into graphs and charts for better understanding of the information. All this will give direction to me as a researcher to dig more, assess the findings, and compare and analyze the responses of the students and teachers. Interviews, online survey forms and in-depth curriculum analysis of computer arts degree of mentioned universities in table 3.1 helped in extracting the data, analysis, linking to conclusion.



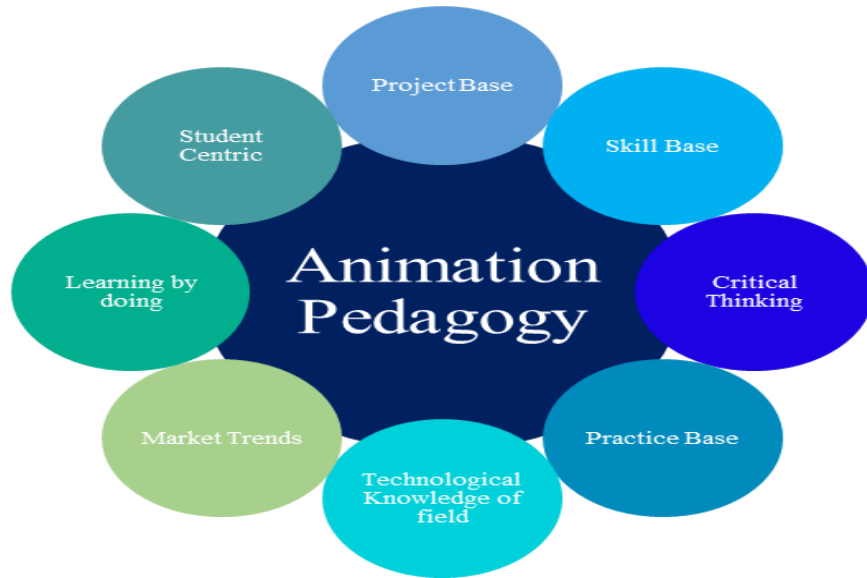


Figure 1: Theme and Subthemes of Animation Pedagogy

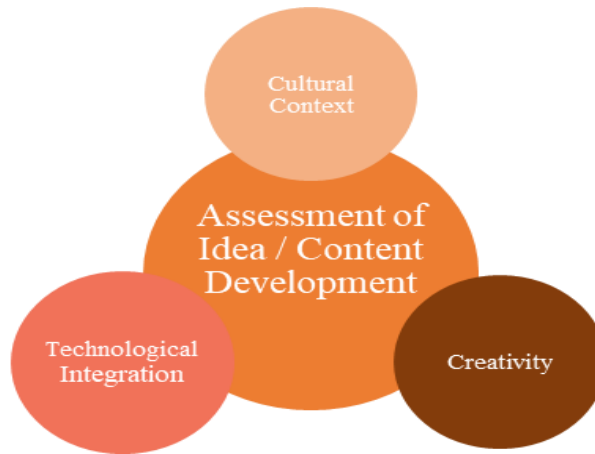


Figure 2: Illustration of creativity process

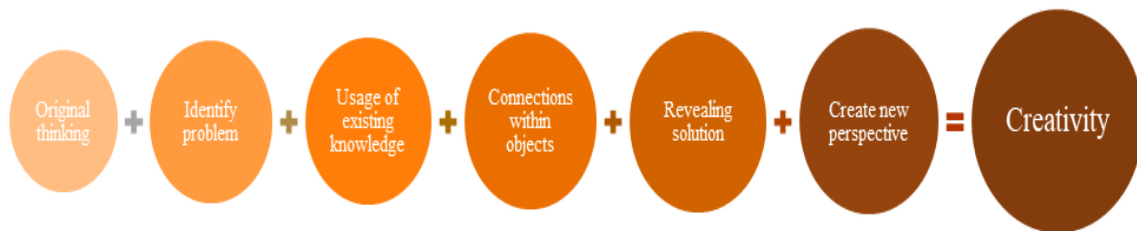


Figure 3

## **Ethical Considerations**

A consent form was given to the interviewees which stated the agreement about the obligation and responsibilities of everything involved in the process of the research and data gathering. The agreement included the purpose of the study, the procedure and responsibilities that go with it. The anonymity of the interviewees was a major concern and they were assured that the information they have given would remain confidential and strictly be used for this research only. It was made clear that all names would be redacted from the document and replaced with pseudonyms. They were also assured that as a researcher, I will use their information only for the completion of my study.

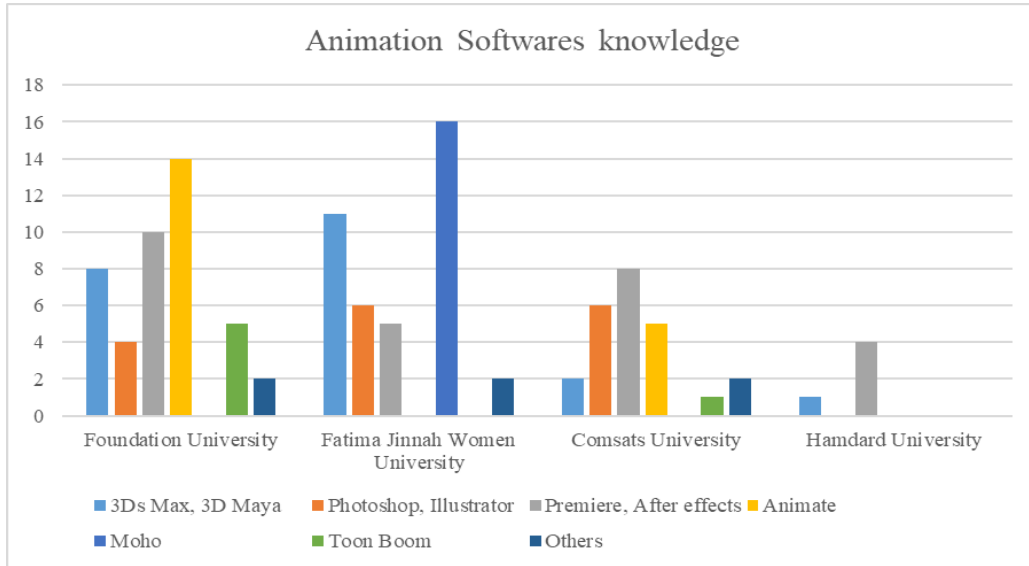
## **DATA ANALYSIS AND FINDINGS**

This chapter describes the analysis and findings of the data collected through interviews, online google survey questionnaires, curriculum analysis and course/workshop conducted in the classroom with recorded video analysis. The results are presented through creating codes and themes.

### **Technological Knowledge**

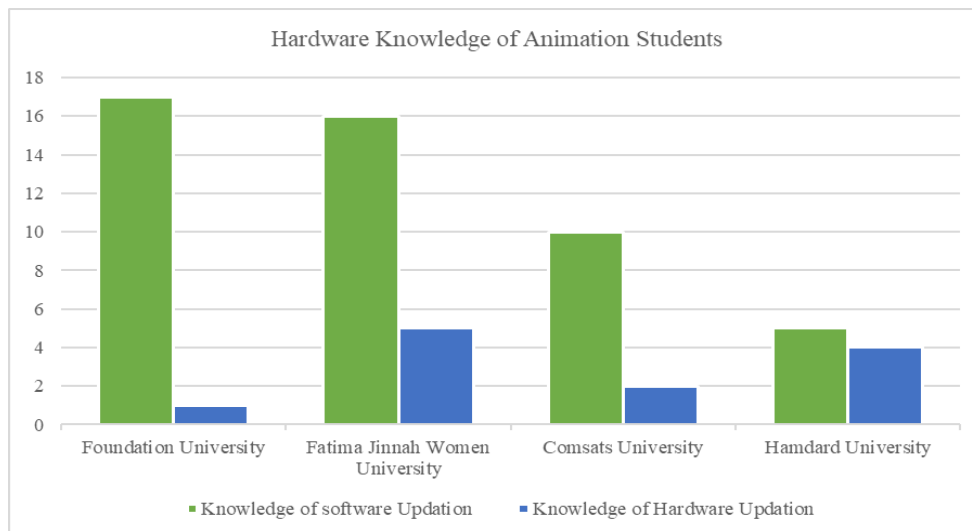
In the field of animation, it is important for animation teachers to not only be updated on the latest animation software, but also on the suitable hardware which can efficiently run animation software. Interviewee 1 stated that animators definitely upgrade their hardware, the reason behind that all processing depends on hardware. Because of this animation or 3D animation is completely digital consisting of dedicated machines on which animation projects are rendered. (Full interview transcripts are presented in Appendix 3). Bosch & Cardinale (1993) exclaimed that while it is important for teachers to be provided with technological skill, it is also important to educate them on how to use that skill to support learning. In addition, interviewee 2 said that we prefer both software and hardware which covers all the content of the animation course. So that we can teach specialized software to every child with every software, with the knowledge of the subject currently present. (Full interview transcripts are presented in Appendix 3) Therefore, Technology integration is an integral part for pedagogy, not a shelf tool because it helps both teachers and students in teaching and learning lessons in the classroom (Furr, Ragsdale, Horton, 2005)

In my opinion animation is a practice base subject for which basic as well as advanced knowledge of software and hardware is essential in the field of animation. The advancement in the software and hardware industry is evolving very fast. If as an animation teacher you didn't accept the revolution of industry, you will become a dinosaur. As interviewee 4 says that: "You have to change your laptop, your hardware, after every two or three years because of the hardware development, the demands of the industry also change" (full interview transcripts are presented in Appendix 3).



**Figure 4: Animation Software Knowledge**

A question regarding adoption of hardware and software was being asked from twin city Universities animation students. Figure 4 shows that they have knowledge of software. Which, clearly second the claim of their teachers that they give updated software knowledge to their students.



**Figure 5: Hardware Knowledge of University Students**

Whereas in figure 5 is regarding hardware knowledge which shows that students don't have much knowledge of hardware as compared to software. Which means that animation teachers need to focus on hardware knowledge when working on learning outcome

### **Market Trends**

Especially for Studio base courses like Animation, teachers need to design curriculum by keeping updated hardware and software knowledge according to market trends. Teaching according to market trends will be helpful for animation students to survive in the market. Interviewee 1 stated that, if Students aren't taught the latest animation techniques, they will be left behind by the competing market. Teachers need to incorporate both, the latest technology, softwares' available in the market into their course content for an enhanced learning experience. (Interviewee 1, personal communications, November 25, 2022). Interviewee 2 suggested that teachers should first observe which softwares are used in the market (Interviewee 2, personal communications, November 29, 2022), meanwhile, Interviewee 3 stated the selection of software will be done according to the students' strengths and weaknesses (full interview transcripts are presented in Appendix 3). Similarly, Diaz and Bontenbal in 2000 stated that: "Using technology to enhance the educational process involves more than just learning how to use specific pieces of hardware and software. It requires an understanding of pedagogical principles that are specific to the use of technology in instructional settings. Pedagogy-based training begins by helping teachers understand the role of learning theory in the design and function of class activities and in the selection and use of instructional technologies".

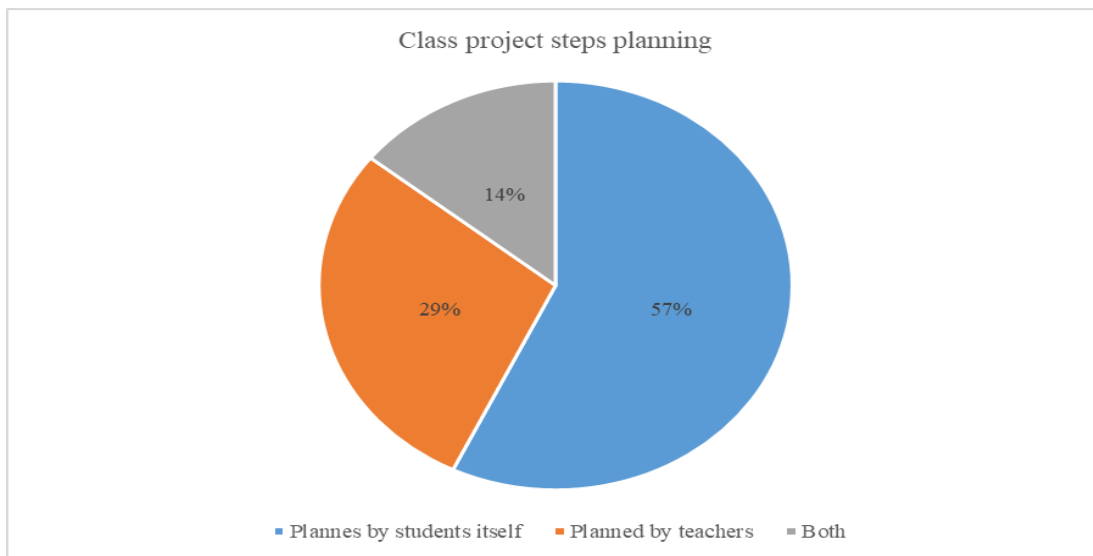
### **Student Centric**

Due to advancements in software and hardware in the field of animation teachers have shifted the focus of their pedagogy more towards student-centered learning that refers to an umbrella which covers a variety of pedagogical approaches that put the student at the center of the learning process. Interviewee 1, Interviewee 2, Interviewee 3 and Interviewee 4 agreed that animation is a project-based course, for which students need to learn practical skills and knowledge, through which they can explore and utilize technology (Interviewee 1, personal communications, November 25, 2022; Interviewee 2, personal communications, November 29, 2022; Interviewee 3, personal communication, December 08, 2022; Interviewee 4, personal communication, December 19, 2022).

Interviewee 2 stated that students' own comfort is necessary to know how much they are interested in using a specific software. Especially during thesis discussions with supervisors and they have their ideas planned out but the question asked from them is which software they are most comfortable with in mind their project idea is evaluated for

visual implementation (Interviewee 2, personal communications, November 29, 2022). Research conducted in 2018 posits that using technology does not only include use of software and hardware independently, but also integrates key concepts of pedagogical philosophies through interactive exercises and integrated lesson plans that are specific to the use of technology in teaching environments (Khan, 2018).

Student centric approach allows students to learn and explore the tool according to their interest. Interviewee 3 stated that teachers design studio activity in such a way that they can learn alongside the teachers' explanations and secondly feedback from the students from learning the new tool as additional incentive to teachers (Interviewee 3, personal communications, December 08, 2022). Webster (1993) stated that technology and technique are interlinked with each other through 'techne' meaning craft/skill which when taught combined definitely increases the thinking process (Webster, 1993, p.121). Interviewee 4 stated that the course is designed according to students' response, by viewing students' participation on an individual interest level (Interviewee 4, personal communications, December 19, 2022).



**Figure 6: Class Project Steps Planning**

Figure 6 shows that twin city universities are more focused towards a student centric approach while doing the animation project. The students' response shows that more students preferred learning on their own.

### **Critical Thinking and Creativity**

Animation as a practical subject and due to technology advancements animation teachers need to enhance critical thinking elements in students to meet the objectives of the course. Interviewee 1 stated that: Firstly, at initial level content writing should be done

according to animation in the form of a warm-up course that clears basic concepts of idea development and enhances students critical thinking (Interviewee 1, personal communications, November 25, 2022). Meanwhile, interviewee 2 stated she has helped students in the thinking process so that they can evaluate their idea in comparison to their skills and tools on which they prefer to work (Interviewee 2, personal communications, November 29, 2022). With the integration of software and hardware development in pedagogical critical thinking, progressiveness and appropriate learning will develop in learners (Ismajli, Hatixhe, Bytyqi-Damoni, Arlinda, Shatri, Kyvete, Ozogul, Gamze, 2020). Interviewee 4 says that to understand animation, one needs to understand the physics of animation. The observation of organic and inorganic movements can be understandable through behaviors. Animation is not only about anatomy movement but it includes the psychological behaviors of society, cultural, and geographical upbringing create moods (Interviewee 4, personal communications, December 19, 2022).

Interviewee 1 stated, currently, we're living in the era of technological advancement and we need to plan our projects such that technology is exclusively implemented to enhance our ideas (Interviewee 1, personal communications, November 25, 2022). In the same way Interviewee 2 stated that if you want to stand out you should strengthen your other foundation where you know creative idea development, overall thinking and animation science (Interviewee 2, personal communications, November 29, 2022). Educational researchers found that an integrated curriculum can increase intellectual curiosity, school attitude, problem-solving abilities, and college accomplishment. Integrated curricular knowledge enhances student creativity in generating visual material for any culture (Austin, Hirstein, & Walen, 1997). Interviewee 4 stated that If we want our students to work creatively then we need to teach diversified softwares' with idea development skills in the curriculum so that students can complete the project from scratch to end (Interviewee 4, personal communications, December 19, 2022).

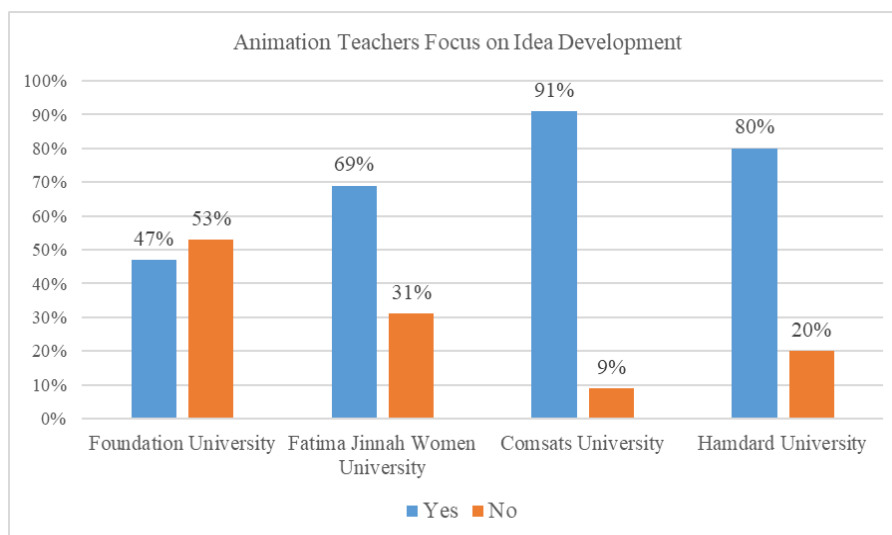
### **Idea Development and Culture**

Idea development is one of the core steps for any creative field and we have also seen the relation of idea development with critical thinking previously, especially if we talk about animation subjects which gives those ideas a stimulus. According to interviewee 1 the advancements in software and hardware distract students from creating conceptual content. Students are updating themselves with new software's and when we discuss idea development they are not focused, due to which conceptual visualization is lacking in the content they are producing (Interviewee 1, personal communications, November 25, 2022). Interviewee 1 also stated that we are producing less and less animated content and what we produce is not effectively promoted on any medium. If we view material from our society's perspective, our students aren't aware about Islamic religious beliefs, historical personalities and leaders (Interviewee 1, personal communications, November 25, 2022). Literature also stated that today students lack an understanding of their own

cultural histories, contemporary values, and cherished customs. Our sole hope for cultural survival is in this direction. A tradition is the future that was made from the past. It's a choice and it takes time (Glassie, 1995).

Idea, skill and tool all are equally important, in fact supporting elements to create an animation strong. Interviewee 2 stated that as a teacher I compare their ideas with their skills. Idea is being evaluated with the tool the student is suggesting. So it is a triangulation basically, the idea, tool and skill set of the student relies on it, so that a successful output will be expected (Interviewee 2, personal communications, November 29, 2022). Interviewee 3 expressed concerns about students being more tech savvy, and lacked textual interests due to which they had poor creative idea development. They are mainly focused on the practical part of making animation, and exclude conceptual work (Interviewee 3, personal communications, December 08, 2022). Furthermore, interviewee 3 suggested that the subject of culture studies should be introduced in Computer Arts and in other creative degrees. So that the new generation becomes aware about their cultural content, only then they will effectively create original animation content (Interviewee 3, personal communications, December 08, 2022).

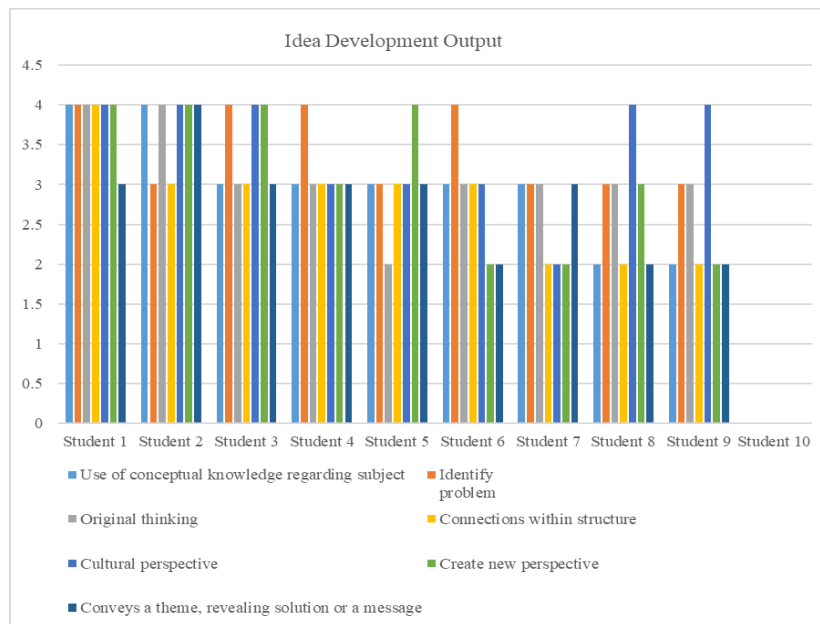
One can support the originality of an idea through their customs and cultural studies. Interviewee 4 claimed that we have to incorporate aesthetics and cultural values in storytelling to elaborate, how to tell the story through animation, how to bring real emotions into projects, and how aesthetics plays a role in our culture's purity and in projects through animation. So, in brief conclusion, both the idea development and animation are equally significant (Interviewee 4, personal communications, December 19, 2022).



**Figure 7: Animation Teachers Focus on Idea Development**

In the figure 7 blue bar shows how much animation teachers focus on the idea development. So, to create effective concepts development in Computer Arts program students at FUSST, I thoroughly studied an existing course of Idea development and script writing. I found that the elements that Interviewees suggested to me for the improvements of effective concept development are missing. I redesigned the complete course outline of the subject and successfully conducted five lesson plans with effective end results.

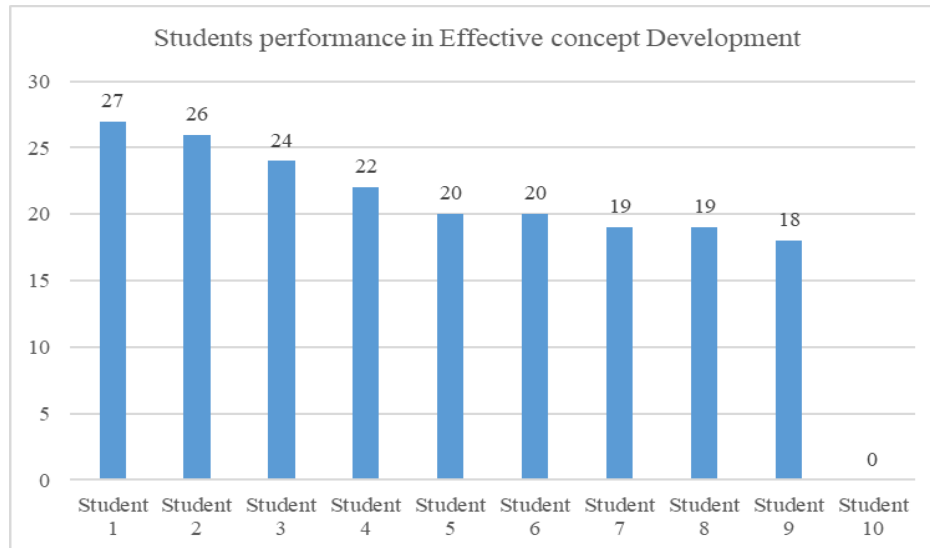
During the lesson conduction and video analysis of this course, I had found that due to project-based learning and student-centered learning, students are participating in class discussion due to which students are capable of thinking and accessing critically basic idea development while learning the basics of the course content. Students preferably learn through class activity and home base activity and during the class activity students learned through peer-based learning. The course was conducted in an I.T Lab so that technology is available to all students for the purpose of content research and story building. However, students preferred using mobile phones for researching content and taking notes during the course. This may be due to students being in the animation program who are already well aware of the technology available. They already have the knowledge of basic animation concepts so it's easy to connect this knowledge with concept building for animation and story writing. All the elements of the idea development and script writing course are shown below in figure 8 which shows students' performance and diversity in their work.



**Figure 8: Idea Development Output**



This grading is done by a field specialist who judged on the basis of those elements which are given in figure 9.



**Figure 9: Students Performance**

Figure 9: Students' output effective concept development after the completion of this course.

## CONCLUSION AND RECOMMENDATIONS

In the conclusion section of my research paper, I'd like to first reflect on how privileged I am to have mostly accomplished the purpose I set for myself at the start of this study in the form of my research question. My research topic originated from my own teaching and workplace experience of more than 6 years; I've had at FUSST. I have implemented several tactics that I discovered throughout the course of this study from published studies as well as this study's findings.

In the first part of my research question, the purpose of my study was to find out how animation teachers' pedagogy has changed due to advancements in software and hardware in Rawalpindi and Islamabad Universities. According to my research, I concluded that Animation teachers have adopted only the software advancements and incorporated them in learning objectives of animation courses. However, teachers lacked knowledge about incorporating hardware advancements in learning objectives due to which most students did not have the knowledge of hardware required in the animation field. After the evolution of technology in the animation industry, nowadays teachers have started adopting the market trends to their pedagogy. So, that their students can fulfill the market requirements. Moreover, nowadays students know more about technology,

therefore, animation teachers have adopted student centered pedagogy for diverse outcomes. For this purpose, they are following project-based learning in which teachers are more focused on learning by doing and developing critical thinking among students of animation. These insights led me to conclude that animation teachers should be updated on technological knowledge, if they want to meet their learning objectives.

Now, in the second part of my research question, the purpose of my research question was to find ways of effective concept development in students of FUSST. After successful implementation of Idea development and script writing course content among FUSST Students, I have concluded that Idea development is the initial part of animation project development, therefore we have to incorporate basics of idea development according to the animation field knowledge. As animation is a technology-oriented field, we have to provide knowledge about technology with respect to content development as well. The most important part of effective content development is the understanding of cultural awareness among students. We need to emphasize on the basic knowledge of our culture, norms and Islamic traditions. Because, our target audience is our society, when any animated content reaches our society, it is important they can understand the basic idea behind the animated content. For this it is necessary that students are aware of the importance of culture, while working on idea development. When all these shortcomings are met in the Idea development and script writing course then effective content will be developed in the animation project. For this purpose, cultural studies subject should also be added to understand the basics of our culture. Another aspect highlighted in this research was the promotion of students' animation work. It is kept stored in students' laptops, hidden from social media platforms. For this purpose, the department needs a platform on which all animation work is uploaded and global access available to access that platform. So that it can also easily shareable on any social media site. Through this animation work will be promoted, along with recognition of FUSST Students and Computer Arts Department. For this website titled "Archyworks" is developed on which students' animation work is saved. It is hoped that this study and the recommendations suggested will benefit the Computer Arts program and students of Foundation University School of Science and Technology.

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