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Article:	**Multimodality, Locatability and Pedagogy: Analyzing Communicative Affordance of Cell Phone Usage in Pakistan`s HEIs**
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ABSTRACT

The study aims to investigate use of smartphones at the university level in Pakistan`s academia (HEIs) and its connection with established pedagogical procedures. In order to make a clear connection with philosophical perspectives on education and communicative affordance of digital devices, it also tends to look into how Smartphone applications affect the learning effectiveness through newly infused digital features of screen sharing, video streaming and image production. For the purpose, 50 University teachers and 550 students are selected through purposive sampling and surveyed.

Keywords: Communicative Affordance, Mobile Phones, Screen Sharing, Image Production

Introduction

While affordance theory examines the association between subjective perception about the utilization of a technology by a user with the objective or overt qualities of a technology, (Gibson, 1986), communicative affordance "frames the practices through which technologies are involved in the weave of ordinary conduct" (Hutchby, 2001). Social networking sites and affordance perspective is frequently analyzed in the literature (Ellison &Vitak, 2015; Baym, & Boyd, 2012). A paradigm for investigating how technology is incorporated into routines, altering subsequent communication patterns, is included in the communicative affordances approach (Ellison & Vitak, 2015; Hammond, 2010).

With the advent of technology, digital media usage is not only limited to social interaction for the purpose of entertainment worldwide. Because of its emphasis on actionable possibilities, Affordance provides a unique perception on the use Internet communication technologies in academia especially (Higher Education Institutions) HEIs. Hammond (2010) revisits the concept of affordance to investigate its impact for understanding the use of Internet communication technologies for teaching and learning.

Initially, mobile phones were supposed to entitle as "perpetual contact" (Katz & Aakhus, 2002) among people and their social networks. The communicative affordance of availability provided by mobile media can be thought of as a combination of multiplexity, direct contact, and increased frequency.On the other hand, the educational use of mobile communication in HEIs (Higher Education Institutions) is an interesting and important area of study. Msungu et al. (2012) discovered in an interesting study in Tanzania that respondents used their mobile phones to aid in the teaching and learning process. It was discovered that the majority of respondents said they used conventional mobile learning tools, such as texts and calls. Few respondents—mostly members of the teaching staff—had smartphones with a variety of m-learning applications. While others captured and kept files in their smartphones, these were able to develop, post, download, and exchange educational resources.

The adaptation of mobile devices for the spread of academic information at HEIs (Higher Education Institutions) can be found on different levels in Pakistani academia, from WhatsApp community based groups for mentors to SNS usage by students. The rapid and effective communication through WhatsApp has emerged trends of faculty interaction groups, collaborative authoring for research papers, exam checking communities and research initiative communities (Foty & Mendez, 2014; Mpoza & Maqsood, 2021).

According to Miakotko (2017), the smartphone combines a variety of high-end features. Smartphones also evolved into essential components of contemporary communications technology. The availability of extra functions like the internet, music, radio, and other things could be contributing to excessive mobile phone use (Vaidya et. al 2016). The function of education, maybe notably formal education, is challenged by more widespread access to information and knowledge, and the connections between education, society, and technology are today more dynamic than ever (Vyas & Nirban, 2014). The development of systems enabling students to understand how to learn in a mobile environment while maximising the benefits of m-learning, as well as conducting evaluations and providing feedback in a mobile context, require further research (Rajasingham, 2010).

Msungu et al. (2012) looked into how mobile phones have been utilized for teaching and learning in HEIs (Higher Education Institutions) in Tanzania. Mobile phones have also

been employed as a tool for teaching and learning. The physical characteristics are analyzed through size and weight but for those who evaluated through usage are analyzed through battery timing is described as portability. Because smart devices are easily transported and carried on the body, they are used in a various settings and situations (Ito et al., 2005). Because it is frequently evaluated through visual observation, it is the mostly used from the four mobile affordances. Shrock (2015) defines portability's communicative affordance as its ease of use during commutes or waiting, both at home and at work.GPS-enabled mobile phones facilitated the development of new types of "location-based services (LBSs) (Wilson, 2012), such as locative and mobile social networks" (LMSNs) (Frith et al., 2010). According to Rheingold (2002), "knowing exact geographic location is one type of context awareness in which machines outperform humans" (p. 97). Jason & Farman (2012) used location to enable "site-specific storytelling," or narratives created by small groups to promote reflection.

Taking pictures and videos with smart phones has become common place activity (Lenhart et al., 2010). Individuals evaluate mobile phones based on the excellence of their cameras, as discovered in an early study on Keitai in Japan (Ito et al., 2005). With the introduction of higher-quality cameras, multimedia practices gradually shifted. According to Van Dijck (2008), the "increased deployment of digital cameras—including cameras integrated in other communication devices—favors communication functions" (p. 58). However, Msungu et al. (2012) discovered a barrier that prevented some respondents, particularly students, from utilizing phones for educational reasons was the cost of downloading multimedia content. Additionally, most respondents were unaware that users were required to utilize Smart/Visa cards in order to purchase online mobile applications. On this backdrop, the study tends to probe how inclusion of digital devices i.e. cell phones has effected the academic practices in Pakistan`s society and whether the usage of smart phone features has facilitated academia or not.

Objectives

The study aims,

1. To investigate how the possibilities for Smartphone for pedagogical communication differs from face-to-face or computer-mediated communication.

Research Questions

1. How does the Locatability and Multimediality of Smartphone user contributes on both side pedagogy and learning process?
    a) How much the increased Surveillance, Locational identity is helpful in learning and distance learning for both mentors and mentees?
    b) In what ways the Multimediality of Smartphone communication helps the academic environment?

Hypotheses

H_0: Due to Screen sharing, Image production and Synchronous video streaming there is no growing trend of effective learning in Pakistani consumers.

H_1: Due to Screen sharing, Image production and Synchronous video streaming there is growing trend of effective learning in Pakistani consumers.

Literature Review

The interplay between society and technology had been an important area of discussion amongst scholars from various fields, on one hand, Technological determinism provides

explanations for many changes that can be observed in society, and it has a very simple cause/effect form. Taking another stance, the followers of Social determinism strand pose that society is an autonomous force that changes technology that provides explanations for many changes can be observed in technology, and it also has a very simple cause/effect form. Both strands conflict with one another and can be taken in opposition to one another by arguing for the absolute superiority of society over technology. Technology is a part of a different theoretical branch called Social construction of technology (SCOT), which contends that human action shapes technology rather than the other way around. Additionally, they contend that it is impossible to comprehend how a technology is used without also comprehending how it is incorporated into its social environment (Khan, Malik, and Amin, 2014; Postigo, 2016; Davis & Chouinard, 2017).

The physical boundaries of place are being erased by media (Meyrowitz, 1985). According to Rajasingham (2010), untethered mobile telephony connects a large number of potential learners to communication networks. Over the last few decades, dramatic shifts in communication, collaboration, and information processes have been observed within organizations, thanks in part to new technologies that bridge geospatial and temporal boundaries (Rice et. al, 2017). Female students' parents find it simple to contact their daughters via mobile phone (Khan, Malik & Amin, 2014). Around the social construction of place, questions about mobile social networks and sense of place tensions emerge prominently (Meyrowitz, 1985).

An affordances strategy promises a high-level framework for investigating how technologies like mobile media are embedded into routines, influencing subsequent communication patterns (Shrock, 2015).

According to Foty & Mendez (2014), e-learning is a trend in higher education that is redefining how people learn and how instruction is delivered. According to Khan, Malik, and Amin (2014), new technology has improved not only students' academic performance but also the quality of education. According to Vyas & Nirban (2014), m-learning is used as an effective educational tool in other developed countries like UK and US.

Impact of smart phones have been proved to be positive on academic use of these devices (Johnson & Radhakrishnan, 2017). According to Karim (2012), there are numerous logics which shows that the usage of cell phone is important for learning, the most important of which is language learning. According to Rajasingham (2010), it’s very critical to develop the staff to adapt the changing techniques of instructional design. Karim (2012) identified the following major types of mobile phone learning: (a) learning through voice; (b) learning through brief text messages; (c) learning through a visual display; (d) learning through data information; (e) learning through Internet search; and (f) learning through cameras and video clips.

Hammond (2010) investigated usage of ICT for teaching by analyzing the affordance and its contribution in it. They examined Gibson's original concept of affordance and well difficulties associated with its use. Rajasingham (2010) investigated alternatives to assist universities in fulfilling core functions such as “knowledge storage, processing, and dissemination that can be applied to real-world problems”.

Khan, Malik, and Amin (2014) recommend that university students use mobile phones positively and avoid wasting time on unproductive text messages. Because of its emphasis on

actionable possibilities, Hammond and Michael (2010) argue that affordance provides a unique perspective on the use of ICT in education. An "affordances framework" in communication discusses how affordances "limit what can be done with, around, or through the artifact" (Hutchby, 2001). Gaver (1996) argues Affordances can also be felt or heard in addition to the visible senses. Offerings are facts about activity and contact, not perception, as "When door handles are turned, the sound of the latch may convey the affordance of moving the door". It suggests that "the active organism and the acted-upon environment are complementary". "Whether a handle of particular dimensions will provide gripping depends on the grasper's height, hand size, etc.," as demonstrated by Gaver(1996). In a similar vein, a cat-door allows a cat to pass but not a human. According to Karim (2012), a cell phone is one of the technologies that people use to communicate with one another.

Mobile phone use has reduced face-to-face communication (Vyas & Nirban, 2014), According to Foty and Mendez (2014), students are using mobile devices to enhance learning outside of the classroom. As personal computing technologies become more mobile, the distinctions between a mobile phone and a computer become increasingly blurred (Humphreys, 2015). Short messages about timetabling, assignment due dates, and changes in class times are critical aspects of managing education, and m-learning devices are perfectly positioned to facilitate this process (Rajasingham, 2010).

Vyas & Nirban (2014), stated that the fastly growing information and communication technologies, as well as students' increasing computer knowledge, has resulted in the use of numerous advanced technologies in teaching and learning, such as e-learning and m-learning. According to Miakotko (2017), the impact of cell phones and their effects on human health are still being tested and studied. People use mobile phones so much that they become addicted to them (Vaidya et. al. 2016). Media helps to see into those communicative acts that would be difficult to perform physically (Meyrowitz, 1985).

Khan, Malik, and Amin (2014) discovered that students are proud of their expensive mobile phones and sometimes use them as a source of unfair means during examinations. Karim (2012) defined the use of smart devices and advance helps the teachers to grow and enhance the abilities of their students.

The growing mobility of society has a profound impact on how we are living, learning, working, playing, selling and buying; it’s the obligation of educationalists and scholars to project according to the changing needs of their audience (Rajasingham 2010). Smartphones made it possible for people to communicate with one another by calling or texting (Vaidya et. al. 2016).

Humphreys (2012) recognized the significance of mobile social networks in 2015, which, corresponding other ICTs, serve as a means of handling and performing users` personalities. Since what people think and what they do on their mobiles not only impact their relationships with others, on the other hand also serve as a performative means of expressing one's identity. Numerous studies show that individuals are not only aware of the communication they give. According to research with mobile social network users, people are not only aware of the communication they give but also about the communication, they give off when using mobiles.

The link between mobile applications and various features introduced by mobile companies’ time to time with the up gradation of their operating systems has been an important factor in determining the level of affordance being offered to consumers. Google Inc has been

involved introducing updated versions of its social networking application WhatsApp. According to a statement given by Google authorities "When we launched WhatsApp in 2009, people's use of mobile devices was very different from what it is today". The Apple App Store had only been around for a few months. Around 70% of smartphones sold at the time used BlackBerry or Nokia operating systems. "Mobile operating systems provided by Google, Apple, and Microsoft, which account for 99.5 percent of sales today, were found on less than 25 percent of mobile devices sold at the time", it stated in a blog post (The News, December 18, 2018).

On applying the concept to this study, it is intended to investigate how the usage of Smartphones is facilitating or breaking the conventional pedagogy practices in Pakistani academia at University level. Getting a vivid connection with philosophical approaches towards education, it also tends to investigate the impact of Smartphone applications on the learning environment, effective learning and interrelationship between teachers and students.

Theoretical Framework

On the backdrop of the theoretical perspective of "Communicative Affordance", the study is aimed at investigating how technologies are adopted in daily routine lives and effect communicative ways and pratices (Shrock, 2015). The present study focuses on the features a device offers and the physical characteristics of the user handelling it. On discussing modern features of Mobile Phones today, the facilitative environment is rapidly changing the previous communicative practices of users. The study dwells on the using patterns adopted by students and teachers in Pakistan's Higher Education Institutions (HEIs) and seeks to investigate the interplay between communicative atmosphere, academic practices and digital features of Mobile Phone devices. The study assumes, innovation and emergence of new technologies is creating great influence in the academic arena of the Pakistani society. This is to probe with the help of survey how smartphones have changed the learning practices of the Pakistani Academia.

Methodology

This study is based on survey. For this purpose, a questionnaire was filled by a sample of 600 respondents, 50 out of them were filled by the teachers and 550 were filled by the students. The survey given to the respondents was based on the surety of confidentiality. For the current study, purposive sampling is selected due to specific area of study and because the specific subgroup (those who use smartphone for educational purposed) was needed to be sampled for this study. In a country like Pakistan smartphone usage for education is a growing trend and relatively lesser talked and studied about. In order to look at the patterns of smartphone usage by Pakistani academia, the target audience is very specific. So, the purposive (quota) sampling technique is most suitable for analyzing the mindset of the users.

Results

H_0: Due to Screen sharing, Image production and Synchronous video streaming there is no growing trend of effective learning in Pakistani consumers.

H_1: Due to Screen sharing, Image production and Synchronous video streaming there is growing trend of effective learning in Pakistani consumers.

Correlations

			Effective learning	Screen sharing
Spearman's rho	Effective learning	Correlation Coefficient	1.000	.462**
		Sig. (2-tailed)	.	.000
		N	600	600
	Screen sharing	Correlation Coefficient	.462**	1.000
		Sig. (2-tailed)	.000	.
		N	600	600

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Effective learning	Image production
Spearman's rho	Effective learning	Correlation Coefficient	1.000	.469**
		Sig. (2-tailed)	.	.000
		N	600	600
	Image production	Correlation Coefficient	.469**	1.000
		Sig. (2-tailed)	.000	.
		N	600	600

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			Effective learning	Synchronous video streaming
Spearman's rho	Effective learning	Correlation Coefficient	1.000	.417**
		Sig. (2-tailed)	.	.000
		N	600	600
	Synchronous video streaming	Correlation Coefficient	.417**	1.000
		Sig. (2-tailed)	.000	.
		N	600	600

**. Correlation is significant at the 0.01 level (2-tailed).

To investigate the presence of correlation amongst the taken variables, the Spearman's rho Correlation coefficient test was applied on data. The relation of effective learning was studied with three variables i.e. screen sharing, image production, and synchronous video streaming. It was found that in case of effective learning and screen sharing, the P value was 0.000 that is highly significant. Then the relation among effective learning and image production also proven on the P value of 0.000 that indicates high significance. Whereas the Spearman's rho Correlation on effective learning and synchronous video streaming was also found highly significant where the P value is 0.000. So the taken hypothesis is approved by rejecting the null hypothesis. Consequently, it is proven that there is a strong correlation amongst effective learning, screen sharing, image production, and synchronous video streaming. This shows a systematic outlook of the variables in a way that the use of smartphone phone for image production for academic purposes, use of video calling and video link lectures and screen sharing for learning process helps the students and the teacher to create an effective ;earning environment. The advent of technology is hence revolutionizing the pedagogy trends

for the academia in Pakistan.

Discussion and Analysis

The respondents were asked if use of screen sharing on smartphones facilitates better learning, 319 respondents (53.2%) agreed to the statement, 91 respondents (15.2%) said they strongly agree to the statement, whereas 146 respondents (24.3 %) stayed neutral. Only 17 respondents (2.8%) strongly disagreed to it.

On asking the respondents whether the use of image designing tools through smartphone enables students to express their ideas effectively, 348 people (58.0%) agreed to it 99 respondents (16.5%) strongly agreed to the statement, 118 respondents (19.7 %) stayed neutral in their opinion. Only 4 respondents (0.7%) strongly disagreed to the statement.

On a statement, that taking photos of notes enables the students to record the educational information in a better way, 306 respondents (51.0%) agreed while 198 (33.0%) responded as strongly agree, 60 respondents (10.0%) stayed as neutral in their opinion. Only 7 respondents (1.2%) strongly disagreed to the statement.329 out of 600 (54.8%) agreed to the statement that use of video chat tool among students help them develop a better understanding, 125 (20.8%) responded as strongly agree, while 109 (18.2%) stayed neutral. Only 13 respondents (2.2%) strongly disagreed.

The respondents were asked whether the use of video link (synchronous video streaming) through smartphone for delivering lectures is an efficient way of pedagogy, 295 (49.2%) agreed to the statement, 117 (19.5%) responded as strongly agree, it was evident that 149 (24.8 %) respondents stayed neutral. Only 13 respondents (2.2%) strongly disagreed.

In light of the fact that pre-recorded lectures with PowerPoint were ranked as one of the last three (3) services not used, GUMA et al. advised that students be permitted to use smartphones and other mobile devices, as well as discussion forums and lecturer-starting virtual classrooms. The results of this study also suggest that the usage of screen sharing, picture design, and synchronous video streaming has facilitated learning, raising educational standards in the process.

Conclusion

The hypothesis investigating correlation among effective learning with screen sharing, image production and synchronous video streaming is proven on finding p value of 0.000, 0.000, and 0.000 respectively. The findings show that usage of WhatsApp enabled Smartphones creates sound learning atmosphere due to facilitation during commute and student teachers interaction off the campus similarly multiple communicative features of Smartphones (multiplexity) and teacher and student direct interaction possibilities also play a role in the sound learning atmosphere. The possibilities of academic coordination and monitoring student activities through smartphones have enriched the learning experience. The advent of technology has introduced modern ways of screen sharing, image production and synchronous video streaming, which have played a vital role in enhancing the pedagogy practices.

Recommendations

1. Although this technological revolution is playing a positive role towards the development of academic culture, the traditional outlook of the Pakistani academia has also been affected as some conventional features like handwriting and book reading, measures need to be taken to encourage the book reading and handwriting, as this region

specifically has a wonderful traditional heritage of calligraphy which needs to be preserved simultaneously with the technology.

2. Study opened a new venue that introducing such technological feature might create some interference in the personal lives due to its all-time availability, therefore it is suggested designate dedicated hours for both the teachers and students to interact off-campus. Therefore a certain code of ethics needs to be developed so that a work-life balance ad a study-life balance is maintained for both teachers and students respectively.

3. It was discovered that Pakistani academia is moving away from traditional methods and toward technical ones. However, some of the respondents were found to be unfamiliar with technical terms, such as synchronous video streaming, so it is advised that workshops and seminars be held to thoroughly impart the necessary technical knowledge to the academic community.

For the purpose of data collection, a questionnaire was designed on Google Forms, and then distributed to the students and teachers, through their official WhatsApp groups. In future certain other methods can also be employed such as experimentations and other qualitative approaches like focus groups, and intensive interviews to explore diverse aspects of the communicative affordance.

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