



Exploration of Faculty Attitude towards Integration of Web 2.0 into Instructional Practices at University Level during Pandemic

Farah Rashid

Ph.D. Scholar, National University of Modern Languages (NUML), Islamabad, Pakistan. Email: Farashid40@gmail.com
(Corresponding Author)

Aisha Bibi

Assistant Professor, National University of Modern Languages (NUML), Islamabad, Pakistan.

Abstract: *The use of web 2.0 technology, such as social media tools, learning management systems, and presentation software, etc. has brought many changes in education in the recent era of pandemics. To examine the faculty attitude towards the integration of Web 2.0 technology was the target of the study. A descriptive cross-sectional survey design was used, and 125 university instructors were taken conveniently from the disciplines of social science, management science, and basic science. The necessary data was gathered using an attitude scale that was created by Christensen and Kenezek (2009). According to the findings of the study, age disparity, gender, and experience posed no problem in the integration of Web 2.0 technology. The overall positive attitude of the faculty implies the provision of advanced technology as well as professional development courses provided by the institutions to enhance the capabilities of faculty to cope with any further crisis.*

Key Words: Attitude, Higher Education, Survey, Professional use of Web 2.0

Introduction

The technological educational environment is radically reshaping the instructional landscape (Groff, 2013). Technology is an integral part in gaining access to advanced talents known as interdisciplinary competencies that include analytic or inventive reasoning, social and emotional skills, cultural awareness, media and informatics (Care et al., 2019). In today's society, such skills are required not only to flourish but also to be effective. Technology advancements may drastically alter one's life. As a result, there is no choice but to rethink the teaching-learning process (Altun, 2018). Educators have an important role in the educational system. They accelerate the integration of cognition and dexterity in order for their pupils to become tech-savvy plus

effective social capital. As a result, in today's society, integrating technology into education is a critical problem for sustaining as well as upgrading teachers' personal and professional growth (Altun, 2018).

On March 11, 2020, the World Health Organization proclaimed COVID-19 a pandemic. This outbreak originated in Wuhan, China, and has now moved to a lot of countries. The pandemic has reduced the spread of new coronavirus infections in countries where they have been detected. Lockdowns, job non-attendance, educational institute closings, and the stoppage of transport systems are just a few of the tactics countries have implemented to reduce crowds. To stem the amplification of the COVID-19 disease, majority countries worldwide have closed down universities. Over 90 percent of the total of the world's academic

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individuals were affected by the closure. Pakistan has also faced a temporary shutdown of all institutions by March 2020. The country has faced three waves of Covid -19 from 2020 to 2022 and education being the major part of the economy has also undergone the transition from conventional to online modalities. E-learning technology or web-based technology made classroom instruction possible in this environment, but participation was a key problem regarding online education. Web-based learning has also progressed with time and with the transition from Web 1.0 (also known as "read only Web") to Web 2.0 (also known as "read/write Web"), e-learning has shifted from learning 1.0 to learning 2.0. The term web 2.0 is a broader term and encompasses different applications for information communication. By the term Web 2.0, the researcher here means Blogs, Facebook, YouTube, What's App, Twitter, Learning Management System (LMS), Google meet and Course Management System (CMS) etc. The terms Web 3.0 and Web 4.0 are the more progressed generation of the Web.

The epidemic has had a significant influence on the university education business, which is the biggest factor in the state's financial destiny. The closure of institutions has had an impact on university students' learning as well. An urgent way out was obligatory in order to keep the continuance of educational activities in schools, colleges and universities. The internet-based teaching modality was implemented to keep the class running smoothly. In view of [Sun et al. \(2020\)](#), accordingly, courses and assessments are offered online in most developed countries through different programs and social networking sites. Universities use learning management software and fully accessible virtual learning systems to provide online programmes. Many countries employ remote learning to offer lectures ([Varalakshmi & Arunachalam, 2020](#)). According to [Tiruneh \(2020\)](#), prior to COVID-19, numerous countries had online or web-based scholarly endeavours, but the traditional mode of education may have far more strength. Google meet and LMS are examples of digital ways of teaching. Content

made available in support of the independent study, for instance, Khan Academy along with One Course ([UNESCO, 2020](#)). The countries having fewer digitally trained teachers faced many problems in the technology integration during the pandemic.

There is a dearth of studies to assess the faculty attitude in respect of the integration of Web technology at the university level in the recent pandemic scenario in Pakistan. The present study seeks to investigate the faculty attitude while integrating Web 2.0 technology into the teaching-learning activities during Covid 19 pandemic.

Literature

The World Wide Web (www) or web is the element of the internet that could be called a techno-social system because it interrelates human beings on the basis of a technological network. Web 1.0 or read only web was one way and fixed which means no two ways of communication were possible in it. Dale Dougherty who was the vice president of O'Reilly Media formally presented the term web 2.0 in 2004 in a conference meeting (Berners-lee, 1998). In the words of Boileau (2011), the modifications are the reasons for the growth and progress of Web 2.0 technology.

Web 2.0 in Educational Activities

Calskan (2019) conducted a study in Turkey about the worth of web 2.0 technology in which collected data from 114 prospective teachers and found that they possess a very positive attitude about the web 2.0 tools. No significant differences were found in gender base about the use of these technologies in teaching.

Lowga (2012) highlights with a special focus on Tanzania's public universities the level of e-learning and implementation of web 2.0 technologies and stresses some suggestions for the government and policy makers for the best use of the technology in higher education institutions. Among them, internet facility, provision of hard and specific software for all

students and faculty, and provision of alternatives of electricity were most important.

Hollinderbäumer, Hartz and Ükert (2013) conducted a literature review about web 2.0 and social media use in medical education. Most of the work done on this phenomenon was in USA and UK. The results indicate students' preference for the web 2.0 technology integration in the classroom. By using these tools, the students obtain the necessary skills which are useful for their future life.

Boza and Conde (2015) conducted research in Spain in which they tried to validate a scale on teaching, its approach, usage and effect of web 2.0 in higher education. They reached at the conclusion that the training alone was not likely to have an impact on education; it was rather attitude towards web 2.0 and the practice which have more influence in teaching learning practices.

Faizi (2018) tried to know the views and opinions of teachers and students of tertiary education about the use of Web 2.0 technology in language education practices and came to know that everyone was using them at a greater rate both for personal and educative drives. The use of the tools was greater on the part of the students than the teachers. Despite the appreciative behavior of the faculty members, the usage behavior of these technologies for teaching practices was not that much encouraging. Their use of these tools was that of web users instead of creators along with means of communication.

Teachers' Attitude towards Technology Integration

In 2007, Hew and Brush published a comprehensive review of the integration difficulties identified in the literature during the preceding 10 years (1995–2006). There were six types of obstacles discovered, four of which were first-order obstacles including skills, organization, the culture of the subject, as well as evaluation) along with two that were 2nd order constraints comprised teacher attitudes and beliefs; knowledge and skills). Hew and Brush identified the few largest

commonly stated hurdles to educational technology based on an analysis of 48 academic evidence: 1) finances, 2) educators' expertise and abilities, and 3) educators' beliefs and attitudes, which were observed across 40%, 23%, and 13% of the research, correspondingly

External and internal elements work together to make up digital literacy. Knowledge of the availability and use of digital equipment, as well as technical support, are examples of extrinsic variables. Intrinsic factors, but at the other end, correspond to interests, attitudes, and technological capabilities (Altun, 2018). These elements play an important role in developing, envisioning, and building a digital environment for learning and guidance (Anderson and Maninger, 2007). It is critical to understand as well as master how to utilize the gadget as it is a requirement for appropriate tool use. Teachers should feel at ease with the technology since the anxiety of not understanding how to use it might prevent them from using it. It is critical that they are well-versed in the subject and feel at ease and confident. Educators' reservations using technology, or their inability to make enough use of it, will have unfavorable consequences (Yeung et al., 2012). Furthermore, technological ineptitude will have no impact on the use of technology (Altun, 2018).

Significance

It's possible that learning is difficultly centered on Web-based communities, with the primary goal of facilitating originality, teamwork, and exchanging... Web2.0 marks a significant shift in how folks think, according to Dede (2008), who spoke at the Florida Educational Technology Conference. If Web2.0 apps are to be used to assist institutions of higher learning to achieve the change that is so desperately required, instructors must embrace these new applications as official learning aids. As a result, positive teacher attitudes toward technology will influence the efficacy and speed of any scholarly reform including the usage of Web2.0 apps as an instructional tool. Understanding the characteristics and attitudes of people who are now teaching in some kind

of a digital setting might help us better comprehend the route to change that the entire university education is on.

Objective

- 1- To explore the faculty attitude related to the integration of web 2.0 technology.

Hypothesis

- H1:** There is a significant difference in faculty attitude in relation to the web 2.0 integration on the basis of gender.
- H2:** There is a significant difference in faculty attitude with relation to the web 2.0 integration on the basis of age
- H3:** There is a significant difference in faculty attitude in relation to the web 2.0 integration on the basis of experience.

Research Design

The research is based on a quantitative approach. The descriptive cross-sectional survey design was employed. A quantitative study, according to [Creswell \(1994\)](#), is defined as a sort of study that explains a phenomenon by gathering statistical figures and analyzing it by employing scientifically based methodologies.

Population and sample

All teaching faculty of public sector universities in Rawalpindi and Islamabad were taken as the target population. All male and female faculty members comprised the population of the study.

Convenient sampling was used to collect the data. The convenience survey method is a type of accidental or non-random sampling in which respondents are chosen on the base of meeting specified eligibility requirements. These prerequisites usually involve easier access, geographical factors, access at a specific point in time, or a desire to engage ([Dornyei, 2007](#)). One of the most common justifications for utilizing a non-probability survey strategy is that it is less expensive and can be deployed more rapidly than probability sampling ([Battaglia, 2008](#)).

Data Collection

The questionnaires were distributed among the teaching faculty of public universities in February 2022. Data was collected personally from the faculty of social science, management science, and Basic science who participated voluntarily in the survey. 160 questionnaires were distributed among the faculty, out of which a total of 129 responses were collected from different departments. Four responses were excluded on account of being incomplete. The received response rate was 80%.

Instrument

There were two components to the instrument. The primary component comprised of demographics, where the other consisted of Teachers' Attitude toward Computers (TAC). TAC (v6.1) by Christensen and Kenezek (2009) was adapted to gather the data. It consists of 51 items and measures the teachers' Attitude towards Computers. Minor changes were made with the permission of the authors like the word "Web 2.0" was added instead of "computer," and the name of the subscale measuring "Email" was changed to "benefits". The subscales are "Interest," which measures enjoyment and satisfaction consisting of five Likert indicators, i.e 1= strongly disagree to 5=strongly agree, "Comfort," which measures lack of anxiety with five indicators, "Accommodation" measures willingness to learn with five items, "Benefits" measures the usefulness of Web 2.0 with students having five items, "Concerns" which is related to the fear of negative impact that technology will have on the society with eight items, "Utility" related to belief that Web 2.0 is useful for productivity and instruction with eight items, "Perception" which measures overall feeling toward computers with five items (semantic distinctions from 1 to 7), "Absorption" which evaluate the acceptance of computers in a variety of professional and leisure situations with five indicators, "Significance" with five items. The alpha reliability was calculated which was above .7 for all subscales (table 1.1).

Results

Demographics

There were 125 faculty members involved in the study. 27(22%) were males while 97(78%) were females. In terms of their designation, 82(65%) were lecturers, 37(30 %) were assistant professors, 4(3%) were associate professors, while 2(2%) were professors. The age range was different as 20(16%) were of the age group 20-30 years, 68(54%) belonged to 31-40 years, 28(22%) were of the age group 41- 50and 9(7%) were of the age group 51 and above. In terms of experience, mostly 35(28%) had 3-5 years of experience while only 8(6%) had the experience of 15-17 years. When asked about different Web 2.0 technologies they used most often, 78(62%) Google meet was used

while 76(60%) used power point as a teaching tool, whereas 50(40%) used Whats App as a medium of communication with their students during the pandemic. A few teachers, 3(2%), used Twitter.

The results are calculated using SPSS 21 software. The mean of all subscales was calculated as well as the overall scale of attitude (Table1). The overall attitude score shows an optimistic view of faculty regarding Web 2.0 technology. The mean score of the subscales "benefit" and "concern" is comparatively low towards Web 2.0. All other subscales show an optimistic result in relation to Web 2.0 technology, whereas the mean score of "perception" shows a strongly positive result.

Table 1.

	N	Mean	Alpha
Satisfaction	125	3.86	.87
Comfort	125	3.59	.90
Concern	125	2.59	.90
Accommodation	125	3.90	.87
Benefit	125	3.30	.93
Utility	125	3.82	.91
Perception	125	4.84	.93
Absorption	125	3.52	.87
Significance	125	4.00	.90
Overall attitude	125	3.71	.88

Hypothesis 1

In order to test the first hypothesis the

independent sample t test was carried out as shown in the following table.

Table 2. Group statistics of gender

Gender	N	Mean	Std. Deviation	Std. Error Mean	
Attitude	Male	27	3.75	.52	.10
	Female	97	3.69	.38	.03

There was no significant difference in the scores of male (M= 3.75, SD = .52) and female

(M = 3.69, SD = .38); $t(122) = .67, p = .50 > .05$ (table 1.2, table 3)

Table 3. Independent Sample t-test

F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
4.08	.04	.67	12	.50	.06	.09

So there is much evidence for the approval of null hypothesis that there is no significant difference in faculty attitude with relation to the web 2.0 integration on the basis of gender.

Hypothesis 2

In order to check the second hypothesis related to the attitude on the basis of age a one-way ANOVA was conducted.

Table 4. Descriptive statistics of Age

Age	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
20-30	20	3.70	.34	.07	3.54	3.86
31-40	68	3.71	.42	.05	3.71	3.60
41-50	28	3.72	.40	.07	3.56	3.88
51 and above	9	3.69	.60	.20	3.22	4.15

Table 4. shows the total number of respondents having different age groups. It also shows the

mean difference and standard deviation for groups. It is small for different groups.

Table 5. One Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.010	3	.00	.01	.99
Within Groups	21.94	121	.18		
Total	21.95	124			

An analysis of variance shows that the difference in attitude between different age group was not significant, $F(3,121) = .01, p = .99 > .05$ (table 5). Hence there is sufficient data to support the null hypothesis that there are no significant differences in faculty attitudes about web 2.0 integration based on age.

Hypothesis 3

In order to check the third hypothesis, the attitude of faculty towards integrating web 2.0 technology on the basis of experience one-way ANOVA was carried out.

Table 6. Descriptive Statistics of experience

Experience	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
0-2 y	11	3.76	.43	.13	3.47	4.05
3-5 y	35	3.66	.39	.06	3.52	3.79
6-8 y	22	3.64	.36	.07	3.48	3.80
9-11 y	15	3.76	.38	.09	3.55	3.97
12-14 y	13	3.75	.43	.12	3.49	4.01
15-17 y	8	3.82	.54	.19	3.36	4.27
18-20 y	10	3.81	.42	.13	3.50	4.11
21 and above	11	3.66	.59	.17	3.26	4.05
Total	125	3.71	.42	.03	3.63	3.78

Table 6. shows the mean difference between different respondents having a different

experience. The difference is small between different groups.

Table 7. One way ANOVA

Attitude	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.50	7	.07	.39	.90
Within Groups	21.45	117	.18		
Total	21.95	124			

An analysis of variance shows that the difference of attitude between different experience groups was not significant, $F(7,117) = .39, p = .90 > .05$ (table 7), Hence on the basis of experience, there is sufficient proof to justify the null hypothesis that there is no substantial difference in faculty attitudes about web 2.0 integration.

Discussion

The mean of the overall attitude scale shows that there is a positive attitude related to technology integration and as this is a second-order barrier according to Ertmir (1999), it can be said that it did not pose a hurdle for university teachers in the integration of web 2.0 technologies during a pandemic. According to Zhao et al (2002) technical abilities and a positive mindset may aid in overcoming second-order hurdles. The comparative low scores on “benefits” reveal that despite having an overall attitude toward technology the faculty is still uncertain about the usefulness of Web 2.0 to students. It might be because of an abrupt change from traditional to digital modality and every novice phenomenon may take some time to be evaluated about its pros and cons. Moreover, inequity in the provision of technical facilities to all the students might be the reason behind this uncertainty. The subscale “concern” was a reversed score scale and its lower score means that the fear of faculty about the negative impact of technology on society is less. In other words, the lower score on lack of concern indicates an optimistic view of faculty toward technology. In the examination of the first hypothesis, the results show that there is no significant difference in faculty attitude concerning their gender. This finding is contrary to those of [Kay \(2006\)](#) and [Wozney et al. \(2006\)](#) who recommended that male faculty are inclined more toward technology in their instructional practices than

those their female colleagues. The second hypothesis shows that there is no significant difference in faculty attitudes in integrating web 2.0 technologies based on age. This result is contrary to those of [Scherer et al. \(2015\)](#) and [Vanderlinde et al. \(2014\)](#), who suggested that older teachers see technology as a less beneficial instrument for fostering student learning and see more potential challenges in incorporating technology into teaching methods than their younger counterparts. It shows that the faculty of all age groups tried their best to overcome any deficiency they faced by all means and successfully ran the online class procedures. [Wong and Li \(2008\)](#) and [Giordano \(2007\)](#) expressed that instructors with more years of experience in the classroom are more likely than their less-experienced colleagues to use technologies in overall instructional practices, which is contrary to the present finding which reveals that there is no significant difference in faculty attitude in the integration of web 2.0 technologies based on experience.

Conclusion

Because technology is becoming an integral part of the daily routine, it won't be long until it does the same for learners and instructors. Moreover, several socio-technical aspects, such as instructors' technical knowledge, belief, and attitude toward web 2.0 technology, physical infrastructure, regulatory context, and so forth, must be considered when integrating technology as part of the education system. However, given the existing state of technology integration in the support and execution of teaching, now is an excellent time to reinvigorate the centers of learning with advanced technologies in order to improve educational quality. It is critical to strategically incorporate Web 2.0 technology into instruction in order to maintain our nation on

track for growth. It should also meet the demands and interests of education's essential participants, namely teachers. However, it is worth noting that the use of existing technologies by itself will not lead to an improvement in educational quality. However, in the sphere of higher education, broad educational goals can be realized by thoughtful, innovative, and deliberate technological innovations.

Implications and future research

It is clear from the results of the study that the teaching faculty is well aware of the use of Web 2.0 technology and its benefits in instructional practices. The results also revealed that there is still uncertainty about the usefulness of technology for students. This calls for longitudinal study in this respect. It also implies for provision of advanced technology as well as professional development courses that might be provided by the institutions to enhance the capabilities of faculty. It also implies the provision of technological facilities for students for getting more positive effects. Findings

indicated that faculty attitude towards the integration of technology is not affected by gender, age, and experience. It implies providing equal professional growth opportunities irrespective of their gender, age, and experience to cope with the pandemic crises. The positive attitude's effect on teaching methods might be a research area to be investigated. Future research might be conducted to investigate what teaching methodologies the faculty apply while using web 2.0 technology. Moreover, their level of technology proficiency might be investigated.

Limitations

It is a descriptive cross-sectional survey and the responses were reported on self-reported survey forms. The data was reported from a city where good internet facilities were available during the pandemic; hence it is not generalized able on places where such facilities were scarce. A mixed-method design may be employed to get more in-depth results. Moreover, the observation method can also generate better results.

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