

INVESTIGATING TEACHERS' PERCEPTIONS OF WEB 4.0 FOR ENHANCING ESL PEDAGOGY: A QUALITATIVE STUDY OF NOVICE ESL INSTRUCTORS AT THE UNIVERSITY OF SINDH, JAMSHORO

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Abstract

The transformation in Web technology has influenced the way English is taught by teachers to the second language learners. Previous studies considered Web 2.0 and Web 3.0 tools. There is limited research on Web 4.0 and particularly in the developing countries. This study examined the perception of new ESL teachers about the use of Web 4.0 at the University of Sindh in Jamshoro. It also examined the issues that the teachers encounter when teaching English using Web 3.0 applications. Qualitative design is used in this study to investigate the perceptions. The Semi structured interviews were conducted with less experienced teachers (under five years of experience). The interviews were analysed by using the thematic analysis. Findings indicate that Web 4.0 is thought to be a good development by teachers. It may be used to support personalized learning, provide intelligent feedback and engage the learner. However, teachers are challenged in several ways. They need more tech training. They are not always supported at schools. The infrastructure is also problematic. The teachers lack knowledge of how the technology can fit into their instructions. It is revealed that there should be specific teacher training and school preparedness to assist teachers in meaningfully using advanced web technology.

Keywords: Web 4.0, ESL pedagogy, novice teachers, qualitative research, technology integration

1. Introduction

The application of technology in language teaching has transformed the way people teach and learn in the global world. Technology-based learning places now accompany old school classrooms and online tools play a significant role in the teaching of English as a Second Language. With the transition of the Web version 1.0 to 4.0, it has become more interactive, personal, employs artificial intelligence, and interprets meaning better (Choudhury, 2014).

Web 4.0 is also known as symbiotic web, which refers to intelligent systems that respond to users in a manner that suits their requirements (Aghaei, Nematbakhsh, and Farsani, 2012). These tools may be used in the teaching English as a second language to customize learning paths to each student, provide immediate feedback, and enable teachers to base lessons on data. Web 4.0 is however not commonly studied in actual schools, most especially in the Pakistani colleges.

The ESL teachers who have just joined are the ones who will be experimenting on new methods of teaching, yet we do not know how they feel about it, how prepared they are or what their issues with high-tech web tools are. This paper examines the ways in which novices consider applying Web 4.0 in teaching English as a second language and the challenges they encounter when using the Web 4.0 tools in the University of Sindh, Jamshoro.

2. Significance of the Study

The study is important at theoretical and pedagogical levels to the existing literature on the topic of technology integration in ESL learning by addressing a new concept of Web 4.0. The research based on the Technological Pedagogical Content Knowledge (TPACK) model makes its contribution to the literature in question by exploring the perceptions of novice ESL instructors to the use of advanced web technologies in ESL pedagogy. The study provides

information on the interaction between technology, pedagogy, and content knowledge in a higher education setting in ESL by investigating the technology awareness of the instructors, the pedagogical beliefs and the challenges of integrating technology in pedagogy.

At institutional and practical levels, the research provides some important insights on teacher training and policy making in higher education in Pakistan. The study will be useful in guiding curriculum planners, administrators, and policymakers to develop context-specific interventions that will help novice instructors to teach effectively through technology-enhanced ESL teaching.

In addition, the research provides a basis of future studies concerning the new web technologies in language teaching.

3. Research Objectives

1. To examine novice ESL instructors' perceptions of Web 4.0 integration in ESL teaching at the University of Sindh.
2. To identify the challenges novice instructors perceive in adopting Web 4.0 tools for English language teaching.

4. Literature Review

4.1 Evolution of Web Technologies in Education

Web technologies have transformed many aspects of the way of teaching. The concept of Web 2.0 was about people creating the content, collaborating, and sharing on the social media. Blogs, social networks, and wikis were among the tools that facilitated people in learning languages (Kessler, 2018). Web 3.0 introduced intelligent categories, data learning, and artificial intelligence. These characteristics enable the students to have access to more meaningful and context-sensitive information (Berners-Lee, Hendler and Lassila, 2001).

Web 4.0 builds upon these concepts with the help of intelligent programs, machine learning, and enhanced human-computer interaction. Choudhury (2014) believes that Web 4.0 systems are able to predict what the user requires and change their response thus learning environment becomes more responsive and personalized.

4.2 Web 4.0 and ESL Pedagogy

Web 4.0 tools allow students to learn at their own pace, automatic testing, and instant feedback in the teaching of English as a second language. AI language applications and smart tutoring programmes assist students to learn and work alone and remain active (Luckin et al., 2016). These tools correspond to talk-based and student-centred techniques regarding that they address the needs of every learner and prompt further interaction.

However, these high-tech web tools require a considerable level of technology as well as a clear vision of how they can enhance language learning in a teacher (Mishra and Koehler, 2006). Unless teachers receive adequate training and support at school, the use of technologies can remain superficial.

4.3 Teachers' Perceptions and Challenges in Technology Integration

The perception of the teachers can largely influence the use of technology in the classroom. Research indicates that teachers who have a favorable perception about technology are more likely to incorporate technology into the teaching process. Teachers have fewer incentives to use technology when they perceive that there are numerous issues (Ertmer & Ottenbreit-Leftwich, 2010). Other issues that are usually encountered include inadequate training, insufficient time, inadequate access to tools, and lack of school support (Al-Awidi and Aldhafeeri, 2017).

Research in the higher education of Pakistan indicates that although more digital tools are being offered, most educators continue to experience issues with infrastructural development and in receiving training that complicates the effective utilization of technology (Siddiqui, 2018).

Limited studies have been done to examine first-time English as a second-language educators and their disposition towards new web technologies such as Web 4.0.

5. Theoretical Framework

Technological Pedagogical Content Knowledge (TPACK)

The proposed study relies on the Technological Pedagogical Content Knowledge (TPACK) framework suggested by Mishra and Koehler (2006). The TPACK framework demonstrates that the combination of three types of knowledge, including tech knowledge, teaching methods knowledge, and subject knowledge, results in the use of technology effectively in teaching. TPACK does not consider technology as something distinct, but rather looks at the capacity of the teachers to align digital tools with good pedagogies and what they teach (Mishra & Koehler, 2006; Koehler & Mishra, 2009).

TPACK allows us to view the perceptions of the new teachers towards Web 4.0 tools in ESL teaching. Web 4.0 systems such as AI language applications, intelligent feedback, and adaptable learning platforms require that teachers are familiar with their use as well as learn how to teach with them (Choudhury, 2014; Luckin et al., 2016). The framework allows us to analyse the perceptions of new ESL teachers regarding their readiness to use Web 4.0 tools, the issues they encounter, and the compatibility of the tools with the ESL instruction.

Diffusion of Innovations Theory (Rogers, 2003) is also used by us to assist in explaining why teachers perceive obstacles to adoption of new tools as challenging, how they are compatible with current practices, and what advantages they will have over older Web 3.0 tools.

6. Research Methodology

6.1 Research Design

This research adopted a qualitative exploratory research design in order to examine the perception of new ESL teachers towards the use of Web 4.0 in teaching. The qualitative research design was an appropriate choice since Web 4.0 is a new concept in schools and the thinking, beliefs, and struggles of teachers could not be represented well using numbers or tests. The qualitative methods also allow the teachers to discuss their experiences in their own words with more insight and context (Creswell & Poth, 2018).

6.2 Participants

In this research, 10 novice ESL teachers with less than five years of experience at the University of Sindh, Jamshoro were used. Participants were selected with some exposure to the use of digital tools in education. The sample size was sufficient to achieve data saturation as no additional ideas emerged with the increase of further interviews (Guest, Bunce, and Johnson, 2006). The nature of qualitative research is deep understanding more than generalization hence a small but detailed sample was appropriate in the research to investigate the feelings of teachers towards the application of Web 4.0 in teaching ESL.

The demographic profile of the participants is given in Table 1. The sample consisted of all subjects who were English-language teachers with a teaching experience of less than five years. This was anonymous with the use of pseudonyms and the subjects represented a diversity of ESL courses and differing exposure to digital teaching tools.

Participant Code	Gender	Teaching Experience (Years)	Courses Taught	Prior Exposure to Digital Tools
P1	Female	1–2	Functional English	Basic (LMS, PPT)
P2	Male	3–4	Academic Writing	Moderate (Web-based tools)
P3	Female	2	Functional English	Basic

Participant Code	Gender	Teaching Experience (Years)	Courses Taught	Prior Exposure to Digital Tools
P4	Female	4–5	English for academic purpose	Moderate
P5	Male	1	English Grammar	Basic
P6	Female	3	Composition Skills	Moderate
P7	Male	2–3	English for academic purpose	Basic
P8	Female	4	Academic English	Moderate
P9	Female	1–2	Communication Skills	Basic
P10	Male	3–4	Academic Writing	Moderate

6.3 Data Collection

The responses were collected by use of semi-structured one-on-one interviews, each lasting approximately 15-20 minutes. An interview guide was created which included open-ended questions that aligned with the TPACK model and objectives of the present study. The questions looked at:

How well people understand and know Web 4.0.

What do the teaching advantages of ESL mean through the use of Web 4.0?

The challenges that the student encountered using the Web 3.0 tools.

What is the institutional assistance and professional development required?

6.4 Data Analysis

The thematic analysis was used to analyse the data and it was done in accordance with the six-stage framework by Braun and Clarke (2006). The reason behind the selection of this method is that it allows us to identify, analyse, and describe trends in qualitative data in a systematic manner.

The analysis has been done as follows:

Getting acquainted with the Data

Interpretation of the interview transcripts was through repetition whereby the researcher read and re-read the transcripts so that first thoughts can be noted.

Generating Initial Codes

The portions of the data that were critical were also highlighted with codes manually. The codes were based on what the participants said and were touched by TPACK framework.

Searching for Themes

Related codes were clustered, in order to come up with potential themes, which revealed more generalised patterns concerning how instructors perceive the situation and the struggles they encounter.

Reviewing Themes

Coded parts were compared against each theme and to the entire dataset, which ensured that it did not make no sense and remained relevant.

Defining and Naming Themes

All the themes were well specified and labelled and linked to the research questions and the theoretical framework.

Producing the Report

The last themes were presented using the examples of the responses of participants and were discussed regarding available literature.

6.5 Trustworthiness of the Study

Due to the qualitative design adopted in this study, no such standard tests were employed. Rather, trustworthiness criteria as advocated by Lincoln and Guba (1985) were applied to make the study rigorous. The credibility was demonstrated by the use of in-depth semi-structured interviews and verbatim quotes of the interviewees. The concept of transferability was enhanced with the comprehensive description of the research setting and the participants involved in the investigation. Reliability was ensured based on systematic thematic analysis approach defined by Braun and Clarke (2006). The issue of confirmability was dealt with through being transparent on how we coded the data and formed themes and ensuring the results were informed by the responses of the participants and not by biasness of the researchers.

7. Findings

The analysis identified four primary themes revealing what new ESL teachers believe about using Web 4.0 and the issues that they experience when attempting to use Web 3.0 tools.

Theme 1: Perceived Pedagogical Potential of Web 4.0

The respondents preferred Web 4.0 technologies and believed that they could enhance the process of teaching English as a second language. They claimed that Web 4.0 provides individual learning, automatic feedback and makes students more engaged. According to some teachers, AI tools would be useful in correcting students in matters of speaking, writing and pronunciation by providing them with prompt corrections.

This finding is consistent with previous research reports that demonstrate how smart technologies can aid learners to be more autonomous and flexible in terms of their learning (Luckin et al., 2016).

Theme 2: Inadequate Conceptual Understanding of Web 4.0

In spite of the overall positive impressions, many interviewees were characterized by limited conceptual articulation about Web 4.0. Some of the instructors used the terms Web 3.0 and Web 4.0 interchangeably, which is an indication of a lack of theoretical understanding. Such a gap is revealed in the form of a lack of technological knowledge (TK) in the context of TPACK and the need to focus on specific conceptual training in emerging web technologies.

It has been found that similar findings exist in the research of technology integration in teachers where positive attitudes exist, but technical understanding is lacking (Kessler, 2018).

Theme 3: Problems related to the implementation of Web 4.0 Tools

The challenges experienced by the participants in the process of adopting Web 4.0 tools were inadequate training, poor internet connection, inaccessibility of sophisticated software, and insufficient time to experiment with them. Other teachers also said that they were uncertain about how they would coordinate technological tools with curriculum goals, which is indicative of the difficulty at the interface between technological and pedagogical knowledge (TPK).

These issues are in line with previous studies on the impediments to technology integration in the context of higher education (Ertmer and Ottenbreit-Leftwich, 2010).

Theme 4: Institutional Support and Professional Development are necessary

A significant theme that came out of the interviews was that there should be institutional support. The most important aspects which were emphasized by interviewees were structured professional development programmes, workshops based on experience, and technical support. They argued that without institutional investment, there would be no significant introduction of Web4.0 into the ESL pedagogy.

The theme reflects the importance of organisational support in facilitating successful technology integration (Al-Awidi and Aldhafeeri, 2017).

Theme	Description	Sample Excerpts from Participants
Perceived Pedagogical Potential of Web 4.0	Web 4.0 viewed as innovative and supportive of personalized learning and engagement	“These tools may assist students to train independently and obtain prompt feedback.” (P4)
Inadequate Conceptual Understanding of Web 4.0	Confusion between Web 3.0 and Web 4.0 concepts	“I am aware that it is just new technology, but I am not aware of the differentiation of Web 4.0.” (P1)
Challenges in Adopting Web 4.0 Tools	Training gaps, infrastructure issues, and time constraints	“The use of these tools is something we desire, however, training and internet access is a significant issue.” (P7)
Need for Institutional Support	Demand for workshops, technical support, and policy backing	“It is difficult to utilize these tools without institutional support.” (P9)

8. Discussion

This research has revealed that new ESL teachers in the University of Sindh, Jamshoro tend to have a positive attitude towards the use of Web 4.0 tools in teaching English. They view Web 4.0 as a new advancement which will enable the learning process to be more interactive, enable customization of learning, and provide automatic comment on the skills such as writing and speaking. The concepts are in accordance with the previous study, which indicates that intelligent and adaptable technology could support students to become more independent learners and enhance the outcomes at language courses (Luckin et al., 2016; Choudhury, 2014). Nevertheless, despite all these favorable perceptions, the research study discovered that the understanding of Web 4.0 was only limited among the teachers. A large number of them conflated Web 3.0 and Web 4.0. This is in line with previous research that indicates that the enthusiasm of teachers towards digital tools does not necessarily imply a strong level of tech understanding (Kessler, 2018). In a TPACK perspective, this indicates a deficiency in technologic comprehension, which will prevent the teachers to employ the technology to teach efficiently (Mishra and Koehler, 2006).

The findings also present huge issues in the application of the Web 3.0 tools. These issues are the lack of training, a limited amount of technology resources, poor internet, and doubtfulness about the tools fitting the ESL lesson plans. These issues resemble previous studies concerning the use of technology in the university and ESL classroom (Ertmer and Ottenbreit -Leftwich, 2010; Al-Awidi and Aldhafeeri, 2017). Using the Diffusion of Innovations theory developed by Rogers (2003), the teachers can be less disposed to using new tech due to these issues since they believe that it is too complicated and not supported by the school.

Overall, the research shows that new ESL teachers are aware of the teaching value of the Web 4.0, but actual implementation is hampered by training and school preparedness gaps. These results highlight the necessity of structured professional learning and school training to make teachers acquire the technology, teaching, and content knowledge that would enable them to use tech effectively.

9. Conclusion

The qualitative research examined the attitudes of new ESL teachers towards using Web 4.0 tools in the teaching of English and the issues that arise when they use Web 3.0 tools at the University of Sindh, Jamshoro. The findings demonstrate that although teachers tend to affirm the favorable perception of advanced web technologies and realize the benefits of learning

using the tools in question, the actual application thereof is low. It is due to the fact of the absence of clear understanding of the concepts, insufficient training, infrastructure issues, and the lack of support provided by the university.

Based on TPACK framework, the research paper demonstrates that an effective deployment of Web 4.0 tools is not merely about the possession of technology or affection towards the technology. The teachers should have a proper balance of the knowledge of the technology, the teaching method using it, and the content of the subject. This combination should be backed with intensive professional training. Another observation in the study also notes the role of Diffusion of Innovations Theory which assists exploring the issue of challenges that teachers encounter particularly when they view the tools as too complicated or incompatible with what they already do.

10. Implications

The paper provides policy and practice recommendations. Colleges and universities need to invest greater focus in training which allows teachers to employ new technology and not necessarily the technology itself. The designers and school leaders should ensure that tech plans are aligned with the teaching objectives and can be supported.

11. Limitations and Recommendations

Since the research is qualitative and uses a small sample, which is context-specific, it is not intended to generalise the results. It is possible that future research uses mixed-methods designs, taking into consideration the perspectives of students, or comparing the perceptions of novice and experienced instructors to obtain a more comprehensive picture of Web 4.0 incorporation in ESL education.

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