

THE ROLE OF ICT TOOLS IN PROMOTING LEARNER AUTONOMY

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Abstract

Although the use of ICT in language instruction is thought to lead to improved learner engagement, there is still a lack of research concerning the contribution of ICT tools in promoting learner autonomy. Therefore, this research examines the effect of ICT tools on learner autonomy in relation to the mediation of motivation, as proposed within Self-Determination Theory (SDT), amongst undergraduate EFL learners.

In its approach, the study used a mixed methods design, which involved the use of a quasi-experimental method with pre-test and post-test data collection to measure changes in learner autonomy. This was combined with data collected through surveys administered to about 200 participants and interviews with 20 English language teachers. Data obtained from surveys and interviews were subjected to descriptive and inferential analysis such as ANOVA, regression, and correlation tests.

The findings suggest that there is a statistical difference in improving learner autonomy through ICT intervention. Furthermore, it was observed that there is a positive correlation between ICT use and autonomous learning behavior, and it is seen that LMS use, in combination with interactive or gamification tools, shows more effect. From the point of view of motivation, ICT tools that support autonomy, competence, and relatedness motivate learners to be engaged in their work and regulate themselves. In qualitative aspects, teacher guidance and collaboration were emphasized along with other variables like digital literacy and infrastructure.

The current research makes a valuable contribution to the existing body of knowledge by presenting a theoretically sound framework for investigating ICT-based learner autonomy through the lenses of Self-Determination Theory, Self-Regulated Learning, and Sociocultural Theory. The results clearly show that ICT, by itself, is not enough to ensure learner autonomy; the efficiency of ICT as a tool depends on the fit between technology's capabilities and pedagogical approaches as well as the motivation of learners.

Keywords: ICT, learner autonomy, self-determination theory, self-regulated learning, EFL, higher education.

Introduction

The rapidly growing integration of ICT into higher learning institutions has brought about significant changes to the field of language learning, moving it from being largely based on the role of teachers towards a more autonomous and dynamic environment. The use of ICTs in EFL settings, specifically in developing nations, has resulted in greater flexibility in terms of the availability of educational content outside the conventional classroom setting. This has led to renewed focus on the concept of learner autonomy, which is commonly defined as the ability of learners to be able to manage their own learning process through goal-setting, monitoring, and reflection.

While there is an increased use of ICT tools, their ability to develop learner autonomy varies greatly and depends on a number of factors. In many higher education institutions in countries like Pakistan, the incorporation of ICT tends to be superficial in the sense that ICT is being used mainly to deliver information rather than developing learner autonomy. This implies that learners will depend largely on teachers for their educational activities because they lack necessary learner autonomous abilities needed to engage in lifelong learning.

A theoretically informed view of the association between ICT and learner autonomy reveals that Self-Determination Theory (SDT) provides an interesting framework. SDT is premised on the idea that there exist three core needs of autonomy, competence, and relatedness that motivate humans intrinsically. As such, ICT can help develop autonomy by addressing the three aforementioned needs such as allowing the freedom of choice, giving immediate feedback, and engaging in meaningful interaction. On a similar note, Sociocultural Theory and Self-Regulated Learning (SRL) emphasize the importance of mediated communication and collaboration as well as the cyclic process involving planning, monitoring, and evaluation that facilitate autonomous behavior. Based on these theories, ICT does not automatically create autonomy but only helps learners become autonomous when incorporated into a motivational and social context for learning.

ICT usage has been shown empirically to have a positive impact on learner autonomy; nevertheless, the majority of the existing body of research either concentrates on the role of technology or on the overall learning process, without giving sufficient consideration to the motivational factors involved in such a relationship. In addition, very little contextual research exists in the area of South Asian higher education, specifically the Pakistani educational system, which continues to be influenced by the limitations imposed by infrastructure, digital literacy, and teaching methodologies.

In an effort to fill this gap, the current research attempts to explore the impact of ICT tools on fostering learner autonomy among undergraduate students of English for Academic Purposes in the context of a public sector university in Pakistan, while paying particular attention to the mediating effect of motivation based on the framework of Self-Determination Theory. Adopting a mixed methods approach involving both quantitative measurement of learner autonomy and qualitative data on the use of ICT tools by the teachers, the current research attempts to explore the ways in which ICT tools, both separately and jointly, foster autonomous learning behavior.

This research adds to the expanding academic field of technology-assisted language learning through the development of a theoretically informed and contextually specific approach to analyzing the use of ICTs in promoting autonomous learning processes. It additionally provides practical insights for teachers, curriculum planners, and policymakers interested in developing ICT-based learning environments that foster true autonomy.

RESEARCH OBJECTIVES

- To investigate the impact of ICT tools on promoting learner autonomy.
- To evaluate the difference in language learning outcomes between ICT-integrated and traditional teaching methods.
- To explore learners' perceptions of ICT tools in fostering autonomy.

Literature Review

Autonomy has always been viewed as one of the main objectives of language education, especially within the framework of English as a Foreign Language (EFL). Originally conceptualized as an ability to assume control over one's learning process (Holec, 1981), autonomy was later transformed into a more complex concept, which includes various aspects such as cognitive, metacognitive, motivational, and social (Benson, 2013). From the current viewpoint, autonomy can be regarded not only as an attribute of individuals but rather as a socially mediated process of acquiring it through interactions and resources availability.

In this regard, ICT will serve as a very important tool that helps to promote learner autonomy. Through the implementation of platforms such as LMS, MALL applications, and other collaborative platforms on the internet, students gain easy access to authentic materials, work independently, and interact (Reinders & White, 2016; Warschauer, 2022). According to

several studies, ICT promotes independent learning through allowing students to establish goals, choose appropriate materials, and self-monitor (Stockwell, 2020).

The impact of ICT in promoting autonomy is greatly linked to the concept of Self-Regulated Learning (SRL), wherein learning is seen as an ongoing process that entails planning, action, and reflection (Zimmerman, 2000). There are multiple components in digital learning settings, such as monitoring, feedback, and evaluation, which align with SRL and contribute to facilitating self-regulation among learners (Zhang & Zou, 2022; Sun et al., 2023). Studies conducted show that those learners who effectively utilize these technologies develop higher levels of autonomy and demonstrate improved academic performance (Rahimi & Khoshshima, 2022). However, their effectiveness depends on the learners' strategic implementation.

Motivation is yet another key variable which affects the connection between ICT and autonomous learning. According to Self-Determination Theory (SDT), autonomy, competence, and relatedness are three key psychological variables which form the basis of intrinsic motivation (Deci & Ryan, 2020). The use of ICT technologies which promote choice, feedback, and interactivity is likely to satisfy such requirements, and therefore, boost the motivation and engagement of learners (Chen & Hsu, 2020). Games, for instance, can be employed to foster engagement and motivation among learners through the use of rewards and interactivity (Kessler, 2021). However, recent research suggests that ICT tools, while boosting motivation, may prove ineffective when there is no reflection and cognitive processing involved (Tsai, 2022).

Considering the concept of learner autonomy from a sociocultural standpoint, learner autonomy can be seen as something that emerges through socialization and mediation in learning processes (Vygotsky, 1978). Discussion forums, collaborative writing, and other applications of social media enable the engagement in peer activities and co-construction of knowledge, hence enabling the learner to perform within the Zone of Proximal Development (Warschauer, 2022). The collaborative nature of learner autonomy becomes more crucial when considering collectivist societies, for instance in South Asia, where peer collaboration plays an integral part in the learning process (Nguyen & Ho, 2023).

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It is important to note that, despite the increasing number of studies investigating the connection between ICT and learner autonomy, existing studies often pay little attention to the motivational factors underlying this connection and mostly emphasize the technology's benefits or learning results. In addition, there is insufficient research on this issue within the Pakistani higher education system, where specific social and cultural traditions, infrastructure restrictions, and teaching methods influence learners' use of ICT (Rizvi et al., 2023).

In consideration of the above-mentioned deficiencies, there arises a necessity for conducting scholarly work that would utilize a holistic theoretical approach towards analyzing the impacts of ICT tools on learner autonomy. Such a multidisciplinary approach, involving Self-Determination Theory, Sociocultural Theory, and Self-Regulated Learning, will contribute to obtaining a broader perspective about the development of autonomy. In this regard, this study will try to make a contribution in the form of examining the role of ICT tools in promoting

learner autonomy in EFL learners enrolled in an undergraduate program at a Pakistani university.

Methodology

Research Design

The research involved the use of a mixed-method research design approach by combining qualitative and quantitative methods to provide an exhaustive analysis of the impact of ICT tools on the promotion of learner autonomy. In particular, a quasi-experimental design was used in the quantitative analysis, whereby pre-tests and post-tests were conducted to establish the effect of ICT tools on promoting learner autonomy. This was complemented by the qualitative data collected from interviews to allow for an in-depth analysis of the views of the participants.

The methodological process involved in conducting this research included an approach whereby the researcher used qualitative as well as quantitative methods of data collection. In regard to the quantitative method used in this study, a quasi-experimental design, including the use of pretests and posttests, was employed to establish the effects of ICT intervention on learner autonomy. This process involved obtaining results from the experimental process used, followed by interviews in the qualitative approach to further explore the issues. Methodological triangulation was therefore employed throughout this process to ensure validity and reliability of the results (Creswell & Plano Clark, 2018).

Participants and Sampling

The research was carried out in one of the universities under the public sector of Pakistan where students were studying in their first year of English language studies. Approximately 200 students were chosen to participate in the quantitative aspect of the research. Participants were selected by adopting a convenience sampling method due to their accessibility.

Qualitative data collection involved purposively selecting 20 English language teachers who would give information on the application of ICT tools and the effect of ICT tools on the acquisition of learner autonomy. Including both learners and teachers provided a more comprehensive perspective to the problem under study.

Instruments

Various tools were used in order to obtain quantitative and qualitative data as follows: Quantitative Data Collection Tools Pre-test and Post-test The pre-test and post-test were conducted in order to evaluate changes in autonomy levels among learners before and after implementing ICT interventions. Tests centered around key dimensions of autonomy, specifically, self-regulation, goal setting, and independent learning. Survey Questionnaire In addition, the survey questionnaire was carried out to understand students' perceptions towards ICT tools as a means of developing autonomy. The questionnaire consisted of statements on a Likert scale based on well-established autonomy and motivation scales, namely Self-Determination Theory (Deci & Ryan, 2020). Qualitative Data Collection Tool Semi-structured Interviews Semi-structured interviews were performed with English language teachers. Interviews provided insights into the implementation of ICT and autonomous behaviors of learners observed by teachers.

Data Collection Procedure

The process of data gathering was divided into several phases over the course of one semester. The first phase involved conducting a pre-test to determine the initial level of student autonomy. The second phase involved implementing the ICT-based pedagogical intervention wherein the students used ICT tools such as LMS, mobile apps, and social networks for collaboration. The third phase entailed conducting a post-test to determine any changes in the level of student autonomy. Lastly, the survey questionnaires were given to the students to

gather information regarding their attitudes toward using ICT tools. Semi-structured interviews were also held with selected instructors.

Data Analysis

Quantitative Data Analysis The analysis of quantitative data was done by use of Statistical Package for the Social Sciences (SPSS). Descriptive statistics were utilized to describe the data, while inferential statistics were used to look for relationships.

This included: Analysis of Variance (ANOVA) to test differentiation between pre-test and post-test scores. Regression analysis to determine whether ICT utilization predicted autonomous behavior in learning Factor analysis to determine factors associated with ICTs and autonomy Correlation analysis to find out the relationship among variables.

The above statistical methods formed a sound basis for assessing the effect of ICT tools on learner autonomy. **Qualitative Data Analysis** Qualitative data collected through interviews was subjected to thematic analysis using the NVivo software. The process involved coding, categorizing, and identifying themes based on the qualitative data collected. The process helped in linking the experiences of the research participants to the theoretical framework of the study.

Reliability and Validity

To guarantee the quality of the research, several approaches have been adopted. In the case of quantitative data, reliability was determined through the examination of internal consistency through tests like Cronbach's alpha. The validity of the findings was guaranteed by the use of reliable instruments and theoretical frameworks. In regard to qualitative data, the validity of the research was improved by triangulating the data collected from the students' responses and teachers' interviews.

Results /Findings

Quantitative Results Pre-test and Post-test Comparison In order to study the effects of integrating ICT into the learning process, a comparison between pre-test and post-test results was performed. It was found that there is a statistically significant difference between pre-test and post-test results with respect to learner autonomy. Learners were better able to regulate themselves and set goals for learning during the post-test period than before. The results of descriptive statistics also showed that the mean score increased significantly after the intervention, indicating that learners became more capable of regulating themselves in learning when exposed to ICT tools.

ANOVA Results: The Analysis of Variance test (ANOVA) was used to establish if there were any significant differences in the pre-test and post-test scores. It was concluded that there was indeed a significant difference in the improvement of learner autonomy based on the pre-test and post-test scores at the established level of confidence.

This shows that the use of ICT in promoting learner autonomy made a significant impact. **Correlation Analysis** Correlation analysis was carried out to see the association between ICT tool use and learner autonomy. The results showed a highly positive correlation between the number and kind of ICT tool use and learners' autonomy scores.

Factor Analysis

Factor analysis was used to determine the dimensions of ICT tool utilization. Factor analysis yielded separate groups of ICT tools, such as learning management systems, interactive software, and collaborative tools. Each factor had varying influence on learner autonomy, with more interactive and collaborative ICT tools positively associated with self-regulated learning.

Qualitative Findings

Analysis of Themes from Teacher Interviews

A number of themes were identified through the thematic analysis of interviews with teachers in relation to the importance of ICT in fostering learner autonomy:

Increased Engagement and Motivation of the Learners

The application of ICT in the teaching and learning process was observed by the teachers to improve the level of motivation and participation among the students. They were motivated to take part actively in the class exercises. Competencies in Self-regulation It was mentioned that active use of ICT promoted self-regulation competencies among the learners. Such things as progress tracking and instant feedback were found to be especially effective in this aspect.

Dependence on Structured Platforms LMS platforms were convenient for organizing information but were associated with some negative effects as well – the learners relied heavily on the information provided by the teacher and not explored independently. Problems Associated with the Use of ICT Among the problems associated with ICT in the classroom were mentioned low level of digital literacy of the learners, lack of constant Internet connection, and absence of proper institutional support.

Need for Guidance by Teachers Another recurrent issue was the necessity of guidance from teachers when helping the learners to apply ICTs. It was made clear that autonomy does not arise automatically from ICT usage; therefore, certain guidance is needed. Conclusions of Main Findings The conclusions drawn from this study are that ICT integration helps increase the degree of learner autonomy at undergraduate level in English language classes. Based on quantitative analysis, it became clear that ICT usage increases the incidence of self-regulated learning activities. On the other hand, qualitative analysis demonstrated the necessity of motivating the learners, providing guidance from teachers, and taking into account other contextual factors. Importantly, it was noted that for ICT to contribute to learner autonomy, ICT tools have to be used collectively. This implies that both interactive and collaborative ICT tools can enhance learner autonomy. On the other hand, barriers of ICT usage have to be eliminated.

Discussions

In the current research, an attempt was made to explore the contribution of ICTs to fostering learner autonomy in undergraduate EFL students, especially in terms of their interconnection. It can be stated that the empirical evidence suggests that ICT use can lead to a considerable increase in learner autonomy; yet, it is not a straightforward process and depends largely on a number of factors.

From the findings obtained through quantitatively analyzing the data, there was a notable increase in learner autonomy due to ICT intervention, which is consistent with findings from other studies that have reported on the significance of ICT in facilitating self-directed learning among individuals (Reinders & White, 2016; Zhang & Zou, 2022). According to the theory of self-regulated learning, this improvement can be explained by the fact that some of the regulatory aspects of self-regulated learning facilitated by ICT include setting goals, monitoring the process, and evaluating performance (Zimmerman, 2000). It seems that features such as monitoring progress, receiving feedback, and self-assessment have facilitated self-regulation in the learning process.

Motivation turns out to be an essential element that can account for the mentioned outcomes. In line with the theory of self-determination (SDT), the ICT tool can be efficient if it is capable of assisting students in satisfying their psychological requirements concerning autonomy, competence, and relatedness (Deci & Ryan, 2020). The gamification ICT tool, which facilitates the process of getting feedback promptly, rewarding the learner, and allowing him/her to choose, proves to be beneficial in enhancing his/her self-concept and motivating him/her. Hence, he/she becomes actively involved in learning activities and

autonomously. However, ICT tools devoid of interactive and motivational features will not be able to achieve this objective.

Taking into consideration the sociocultural perspective, the findings obtained in the course of the qualitative research stress the importance of social interaction and guided participation in the development of learner autonomy. As indicated by the statements provided by the participants in the research, collaborative learning tools such as discussion forums and peer communication allowed the learners to share information and develop ways to learn autonomously. This notion is also compatible with the socially constructed nature of autonomy through interaction within the ZPD, as suggested by Vygotsky (1978). Collaborative autonomy is particularly important in collectivistic cultures such as Pakistan. However, along with these benefits, the research also pinpoints a number of problems associated with the impact of ICT on the development of learner autonomy. The lack of digital skills and difficulties with technological access were repeatedly noted in interviews conducted with the participants. Such results can be linked to concerns about the growing gap between the developed and developing countries in terms of digital technologies in education (Rizvi et al., 2023). Besides, the existence of traditional teacher-centered teaching methods might prevent the emergence of learner autonomy due to students' dependence on their educators' instructions.

Conclusion

The present study investigated the potential for ICT to promote learner autonomy among university EFL learners, especially with respect to motivation. Results reveal that ICT implementation greatly facilitates learners' capacity for self-directed learning. Nevertheless, this effect is not intrinsic to ICT technologies per se but rather results from how ICTs are used pedagogically in relation to learners' motivational requirements.

In addition, the research emphasizes the effectiveness of utilizing structured platforms together with interactive resources in fostering independence. The findings, which are based on the theory of self-determination, also show that ICT tools promote autonomy by fulfilling the three fundamental psychological requirements of self-determination, which are autonomy, competence, and relatedness.

On the other hand, the findings also reinforce the notion that learner autonomy is not a process that takes place independently. Teacher involvement, collaborative learning, and other variables such as digital literacy and access to technology will determine how efficient the use of ICT can be.

In conclusion, this research highlights that ICT has the ability to serve as an effective catalyst for promoting learner autonomy when used with appropriate teaching methodologies and structural settings. The study calls for a shift in focus from being technology-driven to becoming more learner-oriented and motivation-based.

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