

Chapter 12

Exploring Online Elective Courses and Attitudes Toward Digital Communication: Innovative Strategies for Integrating STEAM Education

Vishnu Achutha Menon

 <https://orcid.org/0000-0003-4028-3685>

Institute for Educational and Developmental Studies, India

Juby Thomas

 <https://orcid.org/0000-0003-2167-0620>

Kristu Jayanti College, India

Aswathi Prasad

Chinmaya Vishwa Vidyapeeth, India

ABSTRACT

This chapter explores the dynamics of online open electives in STEAM education and investigates gender-based differences, age influences, geographical impacts, institutional contexts, and interaction effects on attitudes towards online communication. Utilizing a quantitative research design, data from 520 participants were analyzed using the Measure of Online Communication Attitude (MOCA) questionnaire. Findings indicate gender disparities in self-disclosure, location's influence on apprehension, and the type of institution's impact on social connection and ease. However, no significant interaction effects were observed. These insights underscore

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the need to consider demographic factors in understanding online communication attitudes.

INTRODUCTION

STEAM education integrates science, technology, engineering, arts, and mathematics to provide students with a holistic learning experience. Open electives play a crucial role in STEAM education by offering students the chance to explore subjects beyond their core curriculum. These electives enable students to delve deeper into specific areas of interest within the STEAM fields, nurturing a passion for lifelong learning. Online open electives function by utilizing digital platforms to deliver course content and facilitate student engagement. Through online learning management systems, students can access lectures, assignments, and resources from any location with internet access. This flexibility allows students to tailor their learning experience according to their schedule and preferences. Online open electives often incorporate interactive multimedia resources, discussion forums, and collaborative projects to enhance student learning and engagement. Online platforms may offer features such as adaptive learning algorithms and personalized feedback to cater to individual student needs and learning styles.

This chapter aims to assess gender-based differences in attitudes towards online communication, evaluate the influence of age on these attitudes, investigate the impact of location, explore the effect of institution type, examine the interaction effects of institution type with location and gender, and analyze the distribution of attitudes across various demographic groups.

REVIEW OF LITERATURE

Online learning has emerged as a strategic approach in education, offering numerous advantages that traditional classroom settings may not provide. One notable benefit is the heightened level of interest, curiosity, and intrinsic motivation reported by online students (Smith, 2018). Research suggests that women who engage in online learning demonstrate a strong sense of confidence and independence, often surpassing their male counterparts in academic performance (Price, 2006). Students have expressed satisfaction with collaborative online activities, such as group work and discussions on virtual platforms, highlighting the utility of online forums in facilitating learning (Finegold & Cooke, 2006). Studies have revealed that intermediate-level students tend to exhibit more positive attitudes towards online learning when compared to beginners and advanced learners (Cha

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