Impact of Videoconferencing Platforms on Undergraduates' Skills Development in Kwara State

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Abstract

This study investigates the effects of these platforms on the entrepreneurial and vocational skills development of undergraduates in Kwara State, focusing specifically on shoemaking. A mixed-methods approach using an explanatory sequential design was adopted, combining quantitative data from surveys and experiments with qualitative insights from observations and interviews. Key instruments included the Shoecrafting Test Instrument (STI1 and STI2), attitudinal questionnaires, lesson plans, observations, and focus group discussions. Edupreneurship merges education with entrepreneurial initiatives, empowering learners to not only master trades but also develop business acumen essential for launching and sustaining profitable ventures. By leveraging online platforms, edupreneurs can provide comprehensive training that encompasses both technical skill acquisition and marketing strategies. Effective marketing is crucial for translating vocational skills into successful enterprises, as seen in regions like Aba, Nigeria, where local shoemakers have built thriving businesses through innovative craftsmanship and strategic customer engagement. The findings of the study revealed a higher mean gain score of 7.15 for the Microsoft Teams group compared to 1.25 for the Google Meet group, indicating better skill acquisition. Microsoft Teams facilitated superior collaboration and tool support, leading to more creative and efficient shoemaking outcomes. Gender analysis showed both platforms improved skills development irrespective of gender, though females outperformed males overall. Attitudinal responses were positive for both platforms, with higher scores for Microsoft Teams. The study concludes that digital platforms, particularly Microsoft Teams, significantly enhance vocational skill development, recommending improved digital infrastructure to maximize the effectiveness of these tools in vocational education.

Keywords: Edupreneurship, Microsoft Teams, Google Meet, Vocational Skills, Shoemaking, Gender Influence, Digital Learning Platforms

Introduction

Education is inherently a social activity, historically characterized by the close interaction between skilled teachers and students. However, the accelerating rate of technological innovation has significantly impacted the education system. The advent of technology has revolutionized education, providing students with the autonomy to learn at their own pace, anytime and anywhere,

with or without direct teacher supervision. Moreover, technology facilitates collaborative learning through online interactions with peers, fostering a more flexible, accessible, and connected educational experience.

The foundational aspect of skill acquisition gains heightened importance in the digital era, where education is reshaping itself to harness technology for an enhanced learning experience. This adaptation is essential to navigate the dynamic changes in the field of teaching and learning, ensuring that education remains effective and relevant in the evolving digital landscape. As both the educational system and the workforce embrace technology, students need to adapt to contemporary digital trends while mastering core course content. Integrating technology into the curriculum offers an opportunity for instructors to elevate students' engagement and academic achievements (Kumar et al. 2022). The global digital revolution has made education more affordable and accessible, fundamentally altering the way students learn (Qureshi et al, 2021). This transformation promises to make education more cost-effective and accessible.

In the 20th century, education was predominantly focused on textbook-based content, individual assignments, and isolated subjects, emphasizing traditional literacy skills in reading, writing, and mathematics. However, 21st-century education, particularly in Nigeria, incorporates Information and Communication Technologies (ICT), encouraging a transition to active, student-centered learning with a focus on interdisciplinary, research-driven methods (Taylor & O'Reilly, 2021). The COVID-19 pandemic expedited the adoption of digital learning, underscoring its advantages over traditional approaches, including improved engagement, flexible learning settings, and global collaboration (Hergüner et al., 2020). E-learning, distinguished by both synchronous and asynchronous tools, has become vital in education delivery, offering a flexible and interactive environment (Hrastinski, 2008). The transformation of e-learning from web-based learning to fully integrated digital platforms has significantly impacted education, enhancing accessibility and adaptability to evolving needs (Aparicio et al., 2016; Jabar & Al-Noori, 2020).

Microsoft Teams is a robust collaboration tool that includes video conferencing capabilities. Integrated with the Microsoft Office suite, it is particularly appealing to educational institutions already using Microsoft's tools. Microsoft Teams provides features such as screen sharing, virtual backgrounds, and real-time document collaboration, making it an excellent choice for online classes. While widely recognized for facilitating teamwork, it also serves as a powerful online teaching platform with a range of beneficial features (Nhi & Yen, 2021).

Similarly, Google Meet is a video-conferencing platform that enables teachers to connect with students regardless of their location, allowing for real-time audio and visual engagement. One of the notable aspects of video conferencing tools like Google Meet is their synchronous functionality, where teachers and students can participate in lessons simultaneously (Alice, 2022). Google Meet offers several features, including screen sharing for displaying documents or presentation slides, seamless meeting access without dial-in, and enhanced security with encrypted calls between all participants (Nathanael, 2021).

A key indicator of a sustainable economy is a nation's ability to provide meaningful employment for its population, thereby contributing to national development (Amaechina & Alaubi, 2018). Since no society can advance beyond the quality of its educational system, the development of productivity is enhanced through the entrepreneurial and vocational skills embedded in the curriculum. These skills are crucial for equipping students or trainees with the abilities, ideas, managerial talents, and capabilities necessary for self-employment, rather than dependence on salaried jobs. To economically empower Nigerian youth, it is essential to provide necessary skills acquisition through an effectively implemented curriculum (Oguntimehin & Nwosu, 2014). Entrepreneurship education serves as a strategic tool for promoting both global and regional economic development (Carayannis & Meissner, 2017). Although it varies based on economic, social, and political contexts, this field typically emphasizes key concepts such as risk-taking, innovation, creativity, and environmental awareness. These elements significantly contribute to societal progress, including social change, innovation, enhanced research, and industrial growth (Mohamed, 2020).

Vocational education complements this by broadening the diversity and relevance of the curriculum, focusing on practical skills that enhance students' career readiness and personal development. It is a proven method for reducing unemployment and boosting productivity, both of which are critical for national development (Chalapati & Chalapati, 2020). In today's dynamic economy, integrating vocational education with entrepreneurship skills is vital for driving economic growth and addressing youth unemployment. Vocational programs emphasize practical skills that prepare students for trades like fashion design, carpentry, electrical work, and notably, shoemaking.

Shoemaking holds a rich tradition in Nigeria and remains a valuable and relevant trade. As one of the oldest crafts, shoemaking exemplifies human creativity through the production of

distinctive footwear designs (Michael, 2022). Also known as cordwainery, shoemaking requires specialized skills, including pattern-making, material cutting, stitching, and finishing. It encompasses a range of processes, from traditional handcrafting to modern automated production in factories. This craft combines creativity, precision, and craftsmanship, resulting in a diverse array of shoes for various purposes and occasions.

The concept of Edupreneurship, which merges education with entrepreneurial innovation, directly relates to both entrepreneurial and vocational training. Edupreneurship involves integrating education with entrepreneurial initiatives, where educators innovate to create learning solutions focused on equipping students with the skills needed for self-employment. It emphasizes creativity, market-relevant knowledge, and the development of practical skills to address shortcomings in traditional education systems. According to Pardo-Guerr (2019), edupreneurship involves creating educational solutions that not only impart knowledge but also apply business strategies aimed at empowering learners to become entrepreneurs. Edupreneurs are educators or innovators who design and implement entrepreneurial strategies in education, creating programs that enable learners to establish and sustain businesses.

Edupreneurship focuses on developing educational solutions centered on self-employment, where learners acquire both the technical skills necessary for trades like shoemaking and the business acumen to market their products. Platforms like Microsoft Teams (MT) and Google Meet (GM) provide effective means for delivering such training remotely. Edupreneurs utilize these platforms to offer specialized instruction and mentorship, enabling students to master shoemaking techniques while also learning how to launch and manage successful businesses.

There has been significant scholarly interest in the intersection of gender and the online classroom. Some studies suggest that male and female students experience the online learning environment differently. For instance, Al-Azawei et al. (2017) explored how gender differences affect online participation, finding that engagement is highly individual and complex, regardless of gender. Fadilah et al. (2020) indicated that satisfaction levels in online learning can be influenced by gender differences. Additionally, other research has highlighted gender differences in perceived playfulness and technology acceptance within blended learning environments. Students' attitudes are a key predictor of technology use. Attitude, defined as a mental or neurological state of readiness shaped by experience, directly influences how individuals respond to objects and situations (Jimoh, Adenle & Olabiyi, 2012). Alibraheim (2021) emphasized that

attitude is a fundamental aspect of human life, affecting how people love, hate, like, or dislike things in response to their surroundings. With the rise of computers and digital information sources, online education has become more accessible, though it now exhibits unique characteristics. Drawing on the idea that attitude determines behavior, Abedalaziz, Jamaluddin, and Leng (2013) noted that attitude reflects a person's positive or negative evaluation of a specific topic and represents a tendency to react favorably or unfavorably to certain objects, people, or events (Al-Zaidiyeen, Mei & Fook, 2010).

By integrating entrepreneurial education, vocational training, and practical marketing strategies, this study underscores how edupreneurship can combat unemployment while empowering students to build sustainable careers in trades like shoemaking. Entrepreneurial skills, such as innovation, risk management, and strategic planning, are essential for success in business and vocational pursuits (Liesa-Orús et al., 2020). Fortunately, technology has transformed the learning landscape, enabling students to access resources and collaborate with peers like never before (Shen & Ho, 2020). Ogunlade et al., (2012), defined entrepreneurship education as a purposeful intervention by an educator in the life of the learner to impact entrepreneurial qualities and skills to enable the learner to survive in the world of business. It is the process of systematically acquiring job-related knowledge, skills and attitudes to perform with effectiveness and efficiency a specific task in an organization (Mullins, 2010). It is not an exaggeration to say that technology education is the bedrock upon which advanced nations rest (Egboh, 2009). Entrepreneurship via technology education provides graduates of secondary and tertiary institutions an opportunity to be self-employed and job creators to eradicate poverty and other social menace confronting nations and the world at large (Onasanya, 2013).

The use of digital platforms in delivering these educational experiences represents a contemporary approach to skill development and economic empowerment. However, Nigeria, rich in human and material resources, faces challenges with limited educational facilities and financial constraints, impacting girls' education. The rise in societal ills has led to calls for developing the entrepreneurial environment, emphasizing practical skills and technology integration. The study on "Effects of Microsoft Teams and Google Meet on Undergraduates' Entrepreneurial and Vocational Skills Development" highlights the potential of these platforms in enhancing skill acquisition and preparing students for the digital economy.

Specifically, the study: (i) examined the difference between the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams and Google Meet; (ii) determined the competencies of undergraduates in shoemaking vocational skills using these platforms; (iii) examined the influence of gender on the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams; (iv) examined the influence of gender on the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Google Meet (v) determined the gender influence on undergraduates' attitudes towards using Microsoft Teams and Google Meet and (vi) determined the gender influence on undergraduates' attitudes towards using Microsoft Teams and Google Meet.

The research questions addressed included: (i) Is there any difference in the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams and Google Meet? (ii) How competent are undergraduates in their vocational skills developed in shoemaking when using these platforms? (iii) What is the influence of gender on the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams? (iv) What is the influence of gender on the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Google Meet? (v) What is the gender influence on undergraduates' attitudes towards using Microsoft Teams and Google Meet? (vi) What is the gender influence on undergraduates' attitudes towards using Google Meet? The study tested the following hypotheses: (i) H01: There is no significant difference in the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams and Google Meet. (ii) H02: There is no significant difference in the entrepreneurial and vocational skills development of undergraduates trained in shoemaking using Microsoft Teams and Google Meet based on gender. (iii) H03: There is no significant difference in the attitudes of male and female undergraduates towards using Microsoft Teams for entrepreneurial and vocational skills development. (iv) H04: There is no significant difference in the attitudes of male and female undergraduates towards using Google Meet for entrepreneurial and vocational skills development.

Theoretical Framework for the Study

Social Constructivism: Social constructivism suggests that learning occurs through interactions with the online environment and the people within it, such as through collaboration, teamwork, and communication or discussion (Reid-Martinez & Grooms, 2018; Tularam, 2018).

In essence, learning emerges from the interaction between individuals and technology. A common feature of many virtual learning platforms is their ability to support a constructivist approach to learning. Additionally, most of these platforms are designed primarily to foster interaction and collaboration. Since Microsoft Teams supports flexible and active learning, enabling group work, collaboration, and constructive feedback, it can be considered a tool that facilitates the principles of social constructivism (Martin & Tapp, 2019).

Domestication: Domestication refers to the process by which users integrate technology into their lives (Lindeman, Svensson, & Enochsson, 2021). The domestication theory was applied in this study to understand how pre-service teachers adapt to and use Microsoft Teams as a tool for remote learning. Proponents of this theory argue that the adoption and use of technology follow four successive phases: appropriation, objectification, incorporation, and conversion (Engen, 2019). The rationale for employing domestication theory lies in its suitability for understanding how specific technologies are used and experienced by individuals (Lindeman et al., 2021; Matassi, Boczkowski, & Mitchelstein, 2019; Sujon, Viney, & Toker-Turnalar, 2018). Ultimately, technology should not be viewed merely as functional but should be understood and interpreted as meaningful and integrated into the users' socio-cultural context.

Methodology

This study employs a mixed-methods approach, combining quantitative and qualitative data, to explore undergraduates' attitudes and competencies in using Microsoft Teams and Google Meet for entrepreneurial and vocational skills development. The study adopts an explanatory sequential design. The explanatory approach was used in that the study intended to further explain some sets of quantitative data with qualitative information after the quantitative data had been obtained first. The quantitative component involves surveys and a quasi-experimental design to measure attitudes and skills development, while the qualitative component utilizes observations and interviews to gain deeper insights into students' experiences and competencies. The schematic representation of the experimental design is provided below:

EG_1	O1	X	O2
EG_2	O3	X	O4

Where:

EG_1: Represents experimental group one

EG_2: Represents experimental group two

O1: Is a pretest for experimental group one

O2: Is a posttest for experimental group one

O3: Is a pretest for experimental group two

O4: Is a posttest for experimental group two

[X]: Indicates the treatment for experimental group one (Microsoft Teams)

[X]: Indicates the treatment for experimental group two (Google Meet)

The population for the study encompassed all undergraduates in Kwara State. Specifically, the target population consisted of all 400-level undergraduates enrolled in the entrepreneurship course at Kwara State University, Malete. Within this group, the study purposively selected an intact group from those specializing in shoemaking within the entrepreneurship course to form experimental groups one and two. The total number (40) of students in the intact group including 16 male and 14 female undergraduates, all of whom were in the 400-level shoe crafting category, was sourced from the Entrepreneurship Department. Subsequently, these students were randomly assigned to experimental group one and experimental group two. The study focused solely on students specializing in shoe crafting within Kwara State University, Malete, thus, further studies could explore a larger sample size across multiple universities in Kwara State to facilitate generalizability of findings on the effects of Microsoft teams and Google Meet on undergraduates' entrepreneurial and vocational skills development.

The study employed seven researcher-designed instruments: Microsoft Teams Application, Google Meet Application, Shoecrafting Test Instrument (STI), Attitudinal Questionnaire, Lesson Plan, Observation, and Focus Group Discussion, covering both quantitative and qualitative components. The STI consisted of two parts: STI1 (pretest) and STI2 (posttest), each with 15 multiple-choice questions aligned with Bloom's Taxonomy. The questionnaire assessed attitudes towards Microsoft Teams and Google Meet, while the lesson plan outlined shoecrafting sessions conducted via these platforms. Observation and focus group discussions captured qualitative data on participants' engagement and experience. Participants received training on using Microsoft Teams and Google Meet for remote learning, skill development, and communication. The instruments and methods allowed for a comprehensive understanding of how the platforms influenced the learning process.

The Shoecrafting Test Instrument (STI) and lesson plan were reviewed by three entrepreneurship lecturers for face and content validity, ensuring accurate measurement of intended skills and knowledge. The questionnaire was reviewed by the researcher's supervisor and three educational technology lecturers, incorporating feedback and suggestions to maintain validity. To prevent experimental bias, regular entrepreneurship instructors administered the research instruments. A preliminary study at Ladoke Akintola University of Technology tested the questionnaire's reliability using Cronbach's Alpha, yielding high scores: 0.854 for Microsoft Teams, 0.732 for Google Meet, and 0.748 for Subject Matter Content, confirming internal consistency and reliability, and establishing a solid research foundation.

The researcher obtained an introductory letter from the Head of the Department of Educational Technology at the University of Ilorin to seek permission from the relevant authorities. Participants received a consent form and were assured of confidentiality and no coercion. A pre-test (STI1) was administered to both experimental groups to establish a baseline understanding of their skill development. The groups were then trained on using Microsoft Teams and Google Meet for remote learning. The six-week treatment phase followed, with distinct procedures for each platform, focusing on communication, engagement, and collaboration. Afterward, a post-test (STI2) was administered to assess improvements in skill development. Permissions were obtained from the Head of the Entrepreneurship Department at Kwara State University and the shoecrafting instructor before commencing the research.

The Shoemaking Test Instruments (STI) were designed to examine the difference in the skill development of the undergraduates subjected to Microsoft Teams and those exposed to Google Meet platform to ascertain the tool with greater influence while the interview and observation which constitute the qualitative component of the mixed method were used to further explain undergraduates' competencies in shoemaking skills development and their attitudes towards the use of the tools for entrepreneurial and vocational skills development.

This study was mindful of the importance of ethical practices in conducting the research. Therefore, the research involved obtaining informed consent, ensuring confidentiality, autonomy, anonymity, and privacy of participants' data, and minimizing any potential harm or discomfort. Participation was entirely voluntary without any coercion. Above all, data were collected with the utmost transparency and honesty. The analysis and interpretation of data obtained from the test items and questionnaire were carried out using descriptive and inferential statistics. The mean and

standard deviation were used to answer the research questions except research question 2. The questionnaire items were ranked 4 for Strongly Agree, 3 for Agree, 2 for Disagree, and 1 for Strongly Disagree for questionnaire items that were positively phrased and vice versa for items that were phrased negatively. For hypotheses testing, the Analysis of Variance (ANOVA) statistical technique was used to test research hypothesis 1 and the Analysis of Covariance (ANCOVA) was used to test hypothesis 2 while an independent t-test was used to test hypotheses 3 and 4. All hypotheses were tested at a 0.05 level of significance. The data were analyzed using Statistical Product and Service Solution (SPSS, 21.0 version).

Results

The study examined the impact of videoconferencing platforms on undergraduates' skills development in Kwara state. The results and findings are reported as follows:

Research Question 1: Is there any difference in the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet?

Table 1: Mean scores of male and female undergraduates trained in shoemaking using Microsoft Teams and Google Meet

Group	Pre-test			Post-test			Mean
	N_1	X_1	SD_1	N_2	X_2	SD_2	Gain
1. Microsoft Team	20	4.50	1.14	20	11.65	1.84	7.15
2. Google Meet	20	11.65	1.84	20	10.40	1.67	1.25

Table 1, revealed that there was an improvement in the post-test scores of the two groups, but the Microsoft Teams group had a higher mean gain score. For instance, undergraduates trained in shoemaking using Microsoft Teams had a mean gain score of 7.15 while undergraduates trained in shoemaking using Google Meet had a mean gain score of 1.25. This implies that there was a difference in the skills development of the two groups where the Microsoft Teams group performed better than the Google Meet group. This indicated that Microsoft Teams had a greater edge over Google Meet in shoemaking skills development.

Research Question 2: How competent are the undergraduates in their entrepreneurial and vocational skills developed in shoemaking when using Microsoft Teams and Google Meet?

Table 2: Observation Rubrics for assessing undergraduate competency in shoemaking using Microsoft Teams

Criterion	Moderately Competent (1)	Competent (2)	Highly Competent (3)	Score	Comments
Engagement and Participation	Group rarely participates; minimal engagement	Group participates regularly; shows interest	Group actively participates; highly engaged	2	Group participated regularly but needed occasional prompting.
Collaboration and Teamwork	Limited collaboration; group works mostly alone	Group collaborates well; occasionally assists	Group is highly collaborative; consistently assists each other	3	Group frequently helped each other and worked well together.
Communication Skills	Group communicates minimally; unclear at times	Group communicates clearly; effective exchanges	Group communicates very clearly; highly effective exchanges	2	Group communicated effectively but was occasionally unclear.
Problem-Solving Skills	Group struggles to find solutions; needs guidance	Group finds solutions with some assistance	Group independently finds and implements effective solutions	3	Group solved problems independently and efficiently.
Technical Proficiency with Tools	Basic understanding; group needs frequent help	Good understanding; group occasionally needs help	Excellent understanding; group independently uses tools proficiently	2	Group used tools well but needed some help.
Creativity in Approach	Group rarely shows creativity; follows instructions	Group shows creativity occasionally; some innovation	Group is highly creative; consistently innovative and original	1	Group followed instructions with little innovation.
Time Management	Group often misses deadlines; needs reminders	Group meets most deadlines; manages time well	Group always meets deadlines; highly efficient time management	2	Group met deadlines but needed occasional reminders.
Application of Shoemaking Skills	Basic application; group needs improvement	Adequate application; meets expectations	Excellent application; exceeds expectations	3	Group demonstrated excellent

Criterion	Moderately Competent (1)	Competent (2)	Highly Competent (3)	Score	Comments
					shoemaking skills.
Adaptability and Flexibility	Group struggles with changes; needs guidance	Group adapts to changes; shows some flexibility	Group easily adapts to changes; very flexible	3	Group adapted well to changes in tasks and instructions.
Feedback Reception and Implementation	Group rarely seeks or implements feedback	Group seeks feedback; implements some changes	Group actively seeks and effectively implements feedback	3	Group actively sought feedback and made improvements based on it.

An examination of Table 2 reveals that the group demonstrated overall competence in shoemaking using Microsoft Teams but with variations in performance across different criteria. The group excelled in collaboration and teamwork, problem-solving, adaptability, feedback reception, and the application of shoemaking skills, scoring the highest (3) in these areas. However, they showed only moderate levels of creativity, communication, and technical proficiency, with lower scores (1 or 2) in these categories, indicating room for improvement. The group generally met deadlines and participated regularly but needed occasional reminders and prompting. The table highlights strengths in collaborative efforts and problem-solving but suggests a need for greater innovation and independent tool use.

Table 3: Observation Rubrics for assessing undergraduate competency in shoemaking using Google Meet

Criterion	Moderately Competent (1)	Competent (2)	Highly Competent (3)	Score	Comments
Engagement and Participation	Group rarely participates; minimal engagement	Group participates regularly; shows interest	Group actively participates; highly engaged	2	Group participated regularly but required occasional prompting.
Collaboration and Teamwork	Limited collaboration; group works mostly alone	Group collaborates well; occasionally assists	Group is highly collaborative; consistently assists	3	Group frequently helped each other and worked well together.
Communication Skills	Group communicates	Group communicates	Group communicates	3	Group communicated

Criterion	Moderately Competent (1)	Competent (2)	Highly Competent (3)	Score	Comments
	minimally; unclear at times	clearly; effective exchanges	very clearly; highly effective exchanges		effectively and clearly throughout the sessions.
Problem-Solving Skills	Group struggles to find solutions; needs guidance	Group finds solutions with some assistance	Group independently finds and implements effective solutions	2	Group found solutions but needed occasional assistance.
Technical Proficiency with Tools	Basic understanding; group needs frequent help	Good understanding; group occasionally needs help	Excellent understanding; group independently uses tools proficiently	2	Group used tools effectively but needed help at times.
Creativity in Approach	Group rarely shows creativity; follows instructions	Group shows creativity occasionally; some innovation	Group is highly creative; consistently innovative and original	1	Group followed instructions but showed little innovation.
Time Management	Group often misses deadlines; needs reminders	Group meets most deadlines; manages time well	Group always meets deadlines; highly efficient time management	3	Group consistently met deadlines without reminders.
Application of Shoemaking Skills	Basic application; group needs improvement	Adequate application; meets expectations	Excellent application; exceeds expectations	3	Group demonstrated excellent shoemaking skills.
Adaptability and Flexibility	Group struggles with changes; needs guidance	Group adapts to changes; shows some flexibility	Group easily adapts to changes; very flexible	2	Group adapted to changes but needed some support.
Feedback Reception and Implementation	Group rarely seeks or implements feedback	Group seeks feedback; implements some changes	Group actively seeks and effectively implements feedback	3	Group actively sought and implemented feedback to improve their work

On the other hand, Table 3, indicates that the Google Meet group also performed well in most areas but has some areas that require improvement. The group was highly effective in communication, teamwork, time management, shoemaking skills, and implementing feedback, as reflected by high scores (3) in these categories. They also adapted well to changes, though with some need for support, and effectively used tools but occasionally required help. However, the group struggled with creativity, showing minimal innovation and primarily following instructions without introducing original ideas (scoring 1 in creativity). While they participated regularly and collaborated effectively, they still needed occasional guidance in problem-solving and technical tasks. Overall, the table suggests that while the group is strong in collaboration, communication, and core shoemaking skills, they should work on enhancing creativity, independent problem-solving, and adaptability to become more proficient in using digital platforms like Google Meet for skill development.

Research Question 3: What is the influence of gender on the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams?

Table 4: Mean scores of male and female undergraduates trained in shoemaking using Microsoft Teams

Gender	Pre-test			Post-test			Mean
	N_1	X_1	SD_1	N_2	X_2	SD_2	Gain
1. Male	08	4.00	.926	08	10.75	1.669	6.75
2. Female	12	4.83	1.193	12	12.25	1.765	7.42

Table 4, indicates that both male and female undergraduates exposed to Microsoft Teams had a mean gain score of 6.75 and 7.42 respectively. This implies that the treatment improved the skills development of the undergraduates in shoemaking irrespective of gender. However, the female undergraduates had a better mean gain score than male undergraduates.

Research Question 4: What is the influence of gender on the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Google Meet?

Table 5: Mean Scores of Male and Female Undergraduates Trained in Shoemaking Using Google Meet

Gender	Pre-test			Post-test			Mean
	N_1	X_1	STD_1	N_2	X_2	STD_2	Gain
3. Male	08	3.80.	.723	08	9.38	1.685	5.58

4. Female	12	4.76	1.183	12	11.08	1.311	6.32

Table 5, indicates that both male and female undergraduates exposed to Google Meet had a mean gain score of 5.58 and 6.32 respectively. This implies that the treatment improved the skills development of the undergraduates in shoemaking irrespective of gender but with limited strength compared with Microsoft Teams. However, the female undergraduates had a better mean gain score than male undergraduates.

Research Question 5: What is the gender influence on the undergraduates' attitudes toward the use of Microsoft Teams?

Table 6: Descriptive Statistics of Undergraduates' Attitudes toward the Use of Microsoft Teams for Shoemaking

Items	SA F (%)	A F (%)	D F (%)	SD F (%)	Mean
1. I like the flexibility of Microsoft teams' features.	11 (55.0%)	8 (40.0%)	1 (5.0%)	0 (0.0%)	3.50
2. Using Microsoft Teams offer a flexible navigation.	11 (55.0%	8 (40.0%)	1 (5.0%)	0 (0.0%)	3.50
3. I prefer receiving lectures on Microsoft Teams.	14 (70.0%)	5 (25.0%)	1 (5.0%)	0 (0.0%)	3.65
4. I like the real-time learning sessions with instructor and mates through Microsoft Teams.	13 (65.0%)	6 (30.0%)	1 (5.0%)	0 (0.0%)	3.60
5. I believe Microsoft teams can foster interaction between students during online learning.	14 (70.0%)	5 (25.0%)	1 (5.0%)	0 (0.0%)	3.65
6. I can reach out to my instructor and receive sufficient feedback using Microsoft teams.	14 (70.0%)	5 (25.0%)	1 (5.0%)	0 (0.0%)	3.65
7. Using Microsoft Teams promotes my competencies in mastering the craft of shoemaking.	12 (60.0%)	7 (35.0%)	1 (5.0%)	0 (0.0%)	3.55
8. I believe that Microsoft teams has complete features.	17 (85.0%)	3 (15.0%)	0 (0.0%)	0 (0.0%)	3.85
9. More than other platforms, I believe that Microsoft teams provide a welcoming space for learners diving into entrepreneurial skills in shoe crafting.	13 (65.0%)	6 (30.0%)	1 (5.0%)	0 (0.0%)	3.60

10. Microsoft teams fuel my motivation to start an enterprise in shoemaking.	15 (75.0%)	4 (20.0%)	1 (5.0%)	0 (0.0%)	3.70
11. Microsoft teams promote my enthusiasm for active participation during online learning.	16 (80.0%)	3 (15.0%)	1 (5.0%)	0 (0.0%)	3.75
12. I believe that Microsoft teams offer a seamless technical experience.	13 (65.0%)	6 (30.0%)	0 (0.0%)	1 (5.0%)	3.55
13. Using Microsoft Teams promotes my creativity and innovation	11 (55.0%)	8 (40.0%)	1 (5.0%)	0 (0.0%)	3.50
14. Using Microsoft Teams save internet quota.	5 (25.0%)	13 (65.0%)	2 (10.0%)	0 (0.0%)	3.15
15. Using Microsoft teams is advisable for general learning because it as a valuable tool.	12 (60.0%)	7 (35.0%)	1 (5.0%)	0 (0.0%)	3.55
Grand Mean					**3.58**

To investigate the students' attitude towards the use of Microsoft Teams for developing entrepreneurial and vocational skills in shoemaking in research question 5 and in table 6 above; the mean scores for each of the question items are listed in the last column of table 6. The average mean score for each of the items is 2.50. The average mean score of 2.50 was calculated by adding up each value of the 4-point Likert scale and dividing by 4 (Strongly Agree= 4, Agree = 3, Disagree = 2, and Strongly Disagree = 1. 4+3+2+1=10 divided by 4 = 2.50). Item 14 has the highest mean score of 3.85 which is greater than the average mean score (2.50) and item 8 has the lowest mean score of 3.15 which is also greater than the average mean score (2.50). This implies that undergraduates have a positive attitude towards the use of Microsoft Teams. Therefore, it can be induced that undergraduates' attitudes towards the use of Microsoft Teams for developing shoemaking skills are positive.

Research Question 6: What is the gender influence on the undergraduates' attitudes toward the use of Google Meet?

Table 7: Descriptive Statistics of Undergraduates' Attitudes toward the Use of Google Meet for Shoemaking

Items	**SA F (%)**	**A F (%)**	**D F (%)**	**SD F (%)**	**Mean**
1. I like the flexibility of Google meet's features.	1 (5.0%)	13 (65.0%)	5 (25.0%)	1 (5.0%)	2.70

2.	Using Google Meet offer a flexible navigation.	2 (10.0%)	12 (60.0%)	4 (20.0%)	2 (10.0%)	2.70
3.	I prefer receiving lectures on Google Meet.	3 (15.0%)	11 (55.0%)	6 (30.0%)	0 (0.0%)	2.85
4.	I like the real-time learning sessions with instructor and mates through Google Meet.	2 (10.0%)	12 (60.0%)	5 (25.0%)	1 (5.0%)	2.75
5.	I believe Google Meet can foster interaction between students during online learning.	3 (15.0%)	12 (60.0%)	5 (25.0%)	0 (0.0%)	2.90
6.	I can reach out to my instructor and receive sufficient feedback using Google Meet.	3 (15.0%)	9 (45.0%)	6 (30.0%)	2 (10.0%)	2.65
7.	Using Google Meet promotes my competencies in mastering the craft of shoemaking.	3 (15.0%)	9 (45.0%)	4 (20.0%)	4 (20.0%)	2.55
8.	I believe that Google Meet has complete features.	2 (10.0%)	7 (35.0%0	3 (15.0%)	8 (40.0%)	2.15
9.	More than other platforms, I believe that Google Meet provide a welcoming space for learners diving into entrepreneurial skills in shoe crafting.	1 (5.0%)	9 (45.0%)	7 (35.0%)	3 (15.0%)	2.40
10.	Google Meet fuel my motivation to start an enterprise in shoemaking.	2 (10.0%)	8 (40.0%)	8 (40.0%)	2 (10.0%)	2.50
11.	Google Meet promote my enthusiasm for active participation during online learning.	2 (10.0%)	14 (70.0%)	4 (20.0%)	0 (0.0%)	2.90
12.	I believe that Google Meet offer a seamless technical experience.	5 (25.0%0	12 (60.0%)	3 (15.0%)	0 (0.0%)	3.10
13.	Using Google Meet promotes my creativity and innovation	2 (10.0%)	9 (45.0%)	9 (45.0%)	0 (0.0%)	2.65
14.	Using Google Meet save internet quota.	9 (45.0%)	10 (50.0%)	1 (5.0%)	0 (0.0%)	3.40

15. Using Google Meet is advisable for general learning because it as a valuable tool.	2 (10.0%)	12 (60.0%)	4 (20.0%)	2 (10.0%)	2.70
Grand Mean					**2.73**

To investigate the students' attitude towards the use of Google Meet for developing entrepreneurial and vocational skills in shoemaking in research question 6 and in table 7 above; the mean scores for each of the question items are listed in the last column of table 7. The average mean score for each of the items is 2.50. The average mean score of 2.50 was calculated by adding up each value of the 4-point Likert scale and dividing by 4 (Strongly Agree= 4, Agree = 3, Disagree = 2, and Strongly Disagree = 1. 4+3+2+1=10 divided by 4 = 2.50). Item 14 has the highest mean score of 3.40 which is greater than the average mean score (2.50) and item 8 has the lowest mean score of 2.15 which is also greater than the average mean score (2.50). This implies that undergraduates have a positive attitude towards the use of Google Meet for developing entrepreneurial and vocational skills in shoemaking. Therefore, it can be induced that undergraduates' attitude towards the use of Google Meet for developing shoemaking skills is also positive but with lesser effects when compared with Microsoft Teams.

Hypotheses Testing

The following null hypotheses were tested based on the results of the analyses for each hypothesis formulated:

Ho_1: There is no significant difference between the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet.

Table 8: One-way ANOVA showing significant difference in the Skills Development of the Undergraduates Using Microsoft Teams and Google Meet

Variable	Sum of Squares	df	Mean Square	F	Sig.	Decision
Between Groups	79.050	9	8.783	2.622	.007	Rejected
Within Groups	33.500	10	3.350			
Total	112.550	19				

From Table 8, it can be deduced that there was a significant difference in the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet. This is reflected in the result because the significance value (.075) F (2.622), is greater than 0.05 alpha value (.007>0.05). Thus, the null hypothesis is rejected. This implies that

there was a significant difference in the entrepreneurial and vocational skills development of the undergraduates trained using Microsoft Teams and their counterparts trained with Google Meet.

H_{O2}: There is no significant difference in the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet based on gender.

Table 9: ANCOVA showing significance difference in the Skills Development of the Undergraduates Using Microsoft Teams and Google Meet Based on Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	103.150[a]	14	7.368	3.919	.070
Intercept	108.000	1	108.000	57.447	.001
Microsoft Teams *Gender	51.167	7	7.310	3.888	.077
Google Meet *Gender	12.433	6	2.072	1.102	.467
Error	9.400	5	1.880		
Total	5329.000	20			
Corrected Total	112.550	19			

a. R Squared = .916 (Adjusted R Squared = .683)

From Table 9, it can be deduced that there was no difference in the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet based on gender. This is reflected in Microsoft Teams result because the significance value (.077) of F (3.888) is greater than 0.05 alpha level (.077>0.05); and in Google Meet the results because the significance value (.467) of F (1.102) is greater than 0.05 alpha level (..467>0.05) Thus, the null hypotheses both cases are not rejected. This implies that there was no significant difference in the entrepreneurial and vocational skills development of the undergraduates trained in shoemaking using Microsoft Teams and Google Meet based on gender.

H_{O3}: There is no significant difference in the attitudes of male and female undergraduates towards the use of Microsoft Teams for entrepreneurial and vocational skills development.

Table 10: Independent Sampled t-test showing significant difference in the Attitudes of Male and Female Undergraduates

Gender	N	X	SD	df	t	Sig. (2-tailed)	Decision
1. Male	12	53.16	7.83	18	-.454	.655	Accepted
2. Female	08	54.62	5.55				

From Table 10, it can be deduced that there was no significant difference in the attitude of male and female undergraduates towards the use of Microsoft Teams for entrepreneurial and vocational

skills development. This is reflected in the result: t (18) = -.454 p < 0.05. That is, the result of a t-value of -.454 resulting in a .655 significance value was greater than the 0.05 alpha value. The null hypothesis is therefore accepted. This implies that there was no significant difference in the attitude of male and female undergraduates towards the use of Microsoft Teams for entrepreneurial and vocational skills development.

H_{O4}: There is no significant difference in the attitudes of male and female undergraduates towards the use of Google Meet for entrepreneurial and vocational skills development.

Table 11: Independent Sampled t-test showing no significant differences in the attitudes of male and female undergraduates toward the Use of Google Meet for Entrepreneurial and Vocational Skills Development

Gender	N	X	SD	df	t	Sig. (2-tailed)	Decision
3. Male	12	41.66	8.92	18	.458	.652	Accepted
4. Female	08	39.75	9.513				

From Table 11, it can be deduced that there was no significant difference in the attitude of male and female undergraduates towards the use of Google Meet for entrepreneurial and vocational skills development. This is reflected in the result: t (18) = .458, p > 0.05. That is, the result of a t-value of .458 resulting in a .652 significance value was greater than the 0.05 alpha value. The null hypothesis is therefore accepted. This implies that there was no significant difference in the attitude of male and female undergraduates towards the use of Google Meet for entrepreneurial and vocational skills development.

Discussion of Findings

The findings align with previous research indicating that Microsoft Teams enhances student participation and learning outcomes (Chen et al., 2010; Khaled, 2022). Similarly, students appreciated the lecturers' efficient responses and openness on Microsoft Teams (Aristovnik et al., 2020). Web video conferencing technologies, including Google Meet, foster a sense of community and positive attitudes toward engagement (Srinivasan, 2020). Microsoft Teams was also reported to increase reading interest in lower-grade students (Anggraita, 2022).

However, in contrast to the previous study on gender differences by Adigun et al. (2015), the results of the study on gender revealed that there was no significant difference in academic performance between male and female students. Nevertheless, while some studies reported a significant difference in academic of students based on gender findings of the study revealed no

significant difference in entrepreneurial and vocational skills development based on gender aligning with the previous study by Ekon and Eni (2015) and Nweze (2021). Additionally, while results on gender and attitudes towards Microsoft Teams and Google Meet support AlAzawei et al. (2017), the study disagrees with Cen et al. (2014), who found that gender plays a role in collaborative classroom learning settings. Overall, this study underscores the versatility and effectiveness of Microsoft Teams and Google Meet in facilitating collaborative learning and skills development.

Conclusion

The study maximizes the potential of digital platforms in enhancing entrepreneurial and vocational skills development in shoemaking among undergraduates. The key findings of the study are presented below;

- **Microsoft Teams** demonstrated a greater impact on skills development compared to Google Meet, suggesting its superiority in facilitating learning outcomes based on the study's results.
- **Both platforms** positively influenced the skills development of both male and female undergraduates, indicating a potential gender advantage in digital platform-based learning.
- **No significant difference** in attitude towards using Microsoft Teams and Google Meet based on gender, suggesting that both male and female undergraduates are equally receptive to digital learning tools.

Based on the study's findings, it is recommended that vocational education lecturers use Microsoft Teams and Google Meet, receive training and that the government provides digital infrastructure to support these tools in vocational education. Thus, these findings suggest that educators and institutions should prioritize the adoption of Microsoft Teams for vocational education to optimize learning outcomes.

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