# Harnessing the Power of Social Media: Opportunities for Learning and Professional Development among Educational Leaders

**George Nyaboga Nyarieko**
Institute of Educational Development, East Africa
Aga Khan University
Dar es salaam, Tanzania
nyarieko@gmail.com

**Nicholas Wachira**
Institute of Educational Development, East Africa
Aga Khan University
Dar es salaam, Tanzania

***Abstract*—This study investigates the benefits of integrating the social media platform specifically WhatsApp into an educational leadership development program in Kenya. Focusing on a cohort of participants in the blended-learning Diploma in Educational Leadership Management (DELM) program, which combines face-to-face, Zoom-enabled online classes, self-paced modules and Moodle assessments, the research explores the value that WhatsApp can add to facilitate peer collaboration and resource sharing. A mixed-methods approach, including the Design-Based Implementation Research (DBIR) design, was employed to comprehensively understand the factors influencing educational leaders' engagement within the platform. The study first assessed participants' current level of digital skills through pre-intervention data collection. It then examined how WhatsApp was utilized within the DELM program and identified opportunities for its more effective integration. The results indicate that integrating WhatsApp into the blended learning program fostered collaborative learning and resource sharing among participants. Participants demonstrated significant improvements in their collaborative skills and ability to envision practical applications of WhatsApp for learning, as evidenced by a substantial increase in self-reported digital proficiency by 0.192, t (25) =17.874, p<0.001 following a training workshop on the platform used for learning. The data analysis further revealed fluctuations in user engagement based on course, content, and assessments, with higher activity on weekdays and evenings, suggesting the personalized learning opportunities offered by the WhatsApp platform. These findings contribute to the current understanding of harnessing the power of social media for educational leadership learning. The research highlights the potential of WhatsApp to enhance blended learning experiences, boost digital literacy, and provide personalized learning opportunities. The study recommends establishing dedicated groups, leveraging multimedia, capabilities, and providing comprehensive digital competence training as strategies for effective WhatsApp integration and successful implementation. The findings therefore provide a basis for policymakers to develop effective blended learning communities necessary for improved organizational capacity of educational leaders in Kenya and similar contexts.***

***Keywords—Educational leadership; Blended learning; Social media; WhatsApp***

## I. INTRODUCTION

In the rapidly evolving education landscape, digital literacy has become a critical competency for effective educational leadership. While many educational leaders in Kenya face challenges accessing formal training programs, continuous professional development is necessary to stay abreast of technological and pedagogical advances driving sector transformation [17] [35] [26]. Historically, 72% of Kenyan principals received no leadership training as of 2020, hindering their ability to lead effectively [36].

To address this gap, the DELM program established through a partnership between Aga Khan University and the Kenya Educational Management Institute is one of the running programs for leadership development. DELM follows a blended learning model combining face-to-face instruction, Zoom-enabled online classes, and self-paced study, and Moodle or virtual learning environment (VLE) assessments [10]. Further, each of its 10 core modules (a collection of units) allocated 60 learning hours, with 15 hours (25%) dedicated to online classes, 15 hours face-to-face, 24 hours independent work, and 6 hours for assessments. In addition, the program aims to promote Information and Communication Technology (ICT) integration through a dedicated module (1 of the 10) allocating an additional 75% (face-to-face, independent work, assessments) to it units [10].

While blended learning approaches expand access to training, research shows their effectiveness depends on appropriate technology integration [4]. Studies examining social media integration indicate potential benefits like facilitated collaborative learning participatory discussions with peers, networking and pedagogical approaches for just-in-time peer support [23] [47] [32]. However, opportunities and challenges within the Kenyan educational leadership context

remain underexplored. DELM currently leverages learning management systems without recognizing social platforms' prevalence, overlooking an avenue to supplement 172 hours (12 hours of such utilized for action research) dedicated to online activities.

Ref. [7] noted that issues associated with open platforms can be addressed through guidelines and digital literacy training. With light facilitation together with refinement, social media offers accessible enhancement of online modules with minimal additional burden. However, existing research provides limited insights into factors influencing social media engagement within blended leadership programs. This study aims to address this gap by investigating WhatsApp's potential to enhance DELM participants' experiences and development. Findings could inform effective technology integration strategies, leveraging prevalent tools to maximize blended models' impact. This study, therefore, seeks to contribute to the current understanding of harnessing the power of social media for effective educational leadership learning and capacity building.

## II. LITERATURE REVIEW

### A. *Social Media Role in Blended Learning*

The integration of social media platforms within blended learning programs presents opportunities to foster collaborative learning and community-building for educational leadership development. Research has shown that when designed effectively, online spaces can extend the boundaries of traditional classrooms and enable interactive knowledge-sharing [1] [23].

Specifically, the widespread adoption of WhatsApp and widespread smartphone access offer educational applications well-suited for blended training models [16] [40]. WhatsApp's features, such as multimedia sharing, hashtags, comments, and analytics, provide new avenues to distribute diverse content in convenient formats beyond traditional boundaries [15] [11] [16]. Further, informal online discussions can supplement formal course materials, while public/private groups offer curation flexibility for program-wide or topic-specific learning communities [22] [23].

While existing studies have explored the integration of social media in blended learning environments, there is a lack of research specifically focused on the use of WhatsApp within blended educational leadership programs in the Kenyan context. This study aims to address this gap by investigating the potential of WhatsApp to support the DELM program's blended framework and cultivate an online community for leadership development.

The creative uses of WhatsApp's features, such as hashtags, geotagging, stickers, and GIFs, can balance serious discussions with levity to sustain long-term motivation [15] [25]. Additionally, the analytics and real-time feedback offered by the platform can provide new assessment approaches aligned with the program's goals [43]. By leveraging these opportunities presented by WhatsApp, this study aims to serve as a valuable testbed for innovating blended models of educational leadership training.

### B. *Personalized Learning Opportunities*

Integrating social media platforms like WhatsApp into educational leader professional development can enhance participant engagement and personalized learning opportunities. Prior research has highlighted the potential of technology-enabled personalized learning, where digital tools enable customized content delivery and differentiation to meet the unique requirements of individual learners [21] [4] [27]. This aligns with findings emphasizing the importance of synchronous communication and a cohesive learning community in promoting active participation among learners [19].

Therefore, building on this foundation, the current research investigates the use of WhatsApp in the context of educational leader professional development programs. Employing a mixed-methods approach, existing studies have uncovered insights into how this popular social media platform can enhance personalized learning opportunities for participants. The emphasis has been on the general benefits of social media integration for learning, with further research needed to explore participant characteristics, readiness, and engagement levels within the specific context of WhatsApp-enhanced DELM programs

Understanding the diverse needs and preferences of educational leaders will be crucial in leveraging the full potential of social media-based personalized learning. By addressing participant-centric factors, educational institutions can optimize the integration of social media platforms like WhatsApp to foster more meaningful and personalized professional development experiences for educational leaders [22] [15] [32]. This study aims to contribute to this emerging body of research by investigating the opportunities and challenges of utilizing WhatsApp to enhance personalized learning within the DELM program.

### C. *Support and Feedback for Improvement*

The existing literature on the integration of social media platforms, WhatsApp included, into learning environments provides valuable insights and support for the importance of support and feedback for improving the integration observed in the DELM program. Researchers have highlighted the crucial role of ongoing evaluation and optimization in ensuring the long-term effectiveness of social media integration within educational settings [31] [42].

The study participants' recognition of the value of regular surveys and feedback collection underscores the importance of incorporating user input to meet evolving needs and enhance the integration over time [29]. This aligns with the principles of adaptive learning interventions, which emphasize the need to

continuously adapt based on participant feedback [29] [40].

Furthermore, the literature supports the importance of addressing technical constraints and ensuring instructor comfort with the platform before widespread adoption [31]. The recommendations provided by the study participants, such as the need for faculty training and a phased approach to piloting the integration, align with scholarly insights on successfully leveraging social media in educational settings [42]. These strategies help to build the necessary support infrastructure and facilitate a smooth transition to the integration of social media platforms like WhatsApp [31] [29].

The existing literature provides a strong foundation for understanding the critical role of support and feedback in enhancing the effectiveness of integrating social media platforms into learning environments. The findings from the DELM program further contribute to this body of knowledge, offering practical insights on the importance of ongoing evaluation, user-centered design, and continuous improvement in ensuring the long-term success of such integrations [16] [23]. By building on existing research and addressing the unique considerations of the DELM program, this study aims to generate a more comprehensive understanding of the key factors that support the effective integration of WhatsApp into educational leader professional development and learning.

### *D. Digital Competence of Educational Leaders*

Educational leaders require strong digital literacy and competence to effectively integrate technology and support innovative learning environments. Research shows the critical importance of digital skills for leaders is well-documented, and leaders with such skills can better foster technology use, innovation and improved outcomes [46] [3] [18]. However, studies also highlight persistent challenges leaders face in developing digital proficiency due to lack of targeted technology related training, and professional development opportunities [4] [44] [13]. Additionally, it is generally understood that some leaders regularly require assistance from a technical support staff to complete various tasks. This need for help extends to meeting and conferences as well, suggesting low self-assurance in their digital abilities. This suggests a gap exists in leaders' digital competence that needs addressing through effective interventions.

Providing appropriate interventions can systematically enhance leaders' digital skills. Social media offers spaces for collaborative skills development among users in context through features like content sharing and feedback [16] [1] [23]. Targeted workshop has shown significant improvement on use of smartphone, even though not directly talking about social media, therefore boosting digital proficiency as self-reported in one of the recent studies [40]. The present study aims to fill the gap by examining impacts of a targeted workshop on leaders' digital proficiency in blended environments. The findings from assessing self-reported skills changes could inform better support programs to strengthen leaders' capabilities and enable technology-rich learning settings. Therefore, the conclusion is that a targeted workshop has the potential to enhance educational leaders' digital literacy if designed well, as it addresses needs established in the literature to develop skills through effective interventions for technology integration.

### *E. Framework for Assessment of Digital Competence*

The adoption of a digital competence framework was crucial for thoroughly assessing the participants' digital skills and identifying specific gaps or weaknesses. In this study, the researchers utilized the DigComp 2.1 framework, which provided a standardized structure and common language to evaluate key digital capabilities across five competency areas: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving [7] [14].

This framework was selected as it aligned closely with the study's focus on evaluating the participants' digital competencies, particularly in the context of social media, integration and blended learning for educational leaders in Kenya. Existing research in this area has mainly focused on general digital literacy assessments, without specifically addressing the unique needs and challenges faced by educational leaders in leveraging social media and blended learning approaches [33] [37]. By adopting the comprehensive DigComp 2.1 framework, the researchers were able to conduct a more targeted and meaningful evaluation of the participants' digital skills, which informed the development of tailored interventions to address any identified gaps.

The DigComp 2.1 framework facilitated a systematic self-evaluation of the participants' digital skills through various assessment methods, such as surveys, interviews, and activity evaluations including workshops context [40] [7] [14], see table 1 below. This framework allowed the researchers to link the identified competency gaps directly to specific framework elements which informed the design of targeted interventions to address those gaps

Alternative frameworks, such as Technological Pedagogical Content Knowledge (TPACK) and the International Society for Technology in Education (ISTE) Standards for Students, were considered but ultimately not selected as the primary framework. The TPACK framework according to [30] focuses on the integration of technology, pedagogy, and content knowledge, which was not the main objective of this research. The ISTE Standards, while providing a global benchmark for digital competencies, were deemed less suitable than the comprehensive DigComp 2.1 framework in the context of this study.

TABLE 1: DIGITAL COMPETENCE (DIG COMP 2.1) FRAMEWORK AS DESCRIBED BASED ON A SCALE OF 1-5

| Competency level | 1. Novice | 2. Beginner | 3. Intermediate | 4. Advanced | 5. Expert |
|---|---|---|---|---|---|
| Information and Data Literacy | Browsing, searching, and filtering data | Evaluating data, information, and digital | Managing data, information, and digital content | Apply advanced filters to explore, refine and collect information | Innovative search methodologies for data discovery and retrieval. |
| Communication and Collaboration | Interacting through digital technologies | Sharing information and content through digital technologies | Engaging in digital technologies | Collaborating through digital technologies | Netiquette |
| Digital Content Creation | Developing digital content | Curating and elaborating digital content | Copyright and licenses | Coding and animations | Programming |
| Safety | Protecting devices | Protecting devices | Protecting personal data and privacy | Protecting health and well-being | Protecting the environment |
| Problem-Solving | Solving technical problems | Solving technical problems | Identifying needs and technological resources | Creativity using digital technologies | Identifying digital competence gaps |

*Sources: Ref. [7] [45] [14]*

The adoption of the DigComp 2.1 framework was crucial for this study, as it allowed for a comprehensive and standardized assessment of the participants' digital skills, which in turn informed the development of targeted interventions to address any identified gaps or weaknesses. This focus on assessing and addressing the specific digital competencies of educational leaders in the context of social media integration and blended learning programs represents a key research gap that this study aims to address.

Therefore, literature found out key gaps to address in study as;

1. Lack of research specifically focused on the use of WhatsApp within blended educational leadership programs in the Kenyan context.
2. Need for exploration of participant proficiency, readiness, and involvement levels within the specific context of WhatsApp-enhanced learning within the blended approach.
3. Requirement to understand the diverse needs and preferences of educational leaders to optimize the integration of social media platforms like WhatsApp for the benefit of personalized professional development experiences.

Through addressing these gaps, the study seeks to inform policy makers on the benefits and opportunities available for use of social media specifically, WhatsApp for school leaders personalized learning in the blended learning context.

### *F. Conceptual Framework*

The study was guided using the conceptual framework shown in Fig. 1 below. The framework captures all aspects discussed in the literature review. The model Fig. 1 visually represents how various DELM learning components interact. It illustrates the connections between DELM course participants (CPs), WhatsApp platforms, the exchange of content and resources, and developing a learning community. The representation informs on the potent approach that can be utilized on WhatsApp platforms to enhance its use in learning. Incorporating the Scheme Model in current research allows a visual representation of the research context and relationships to be established.

Therefore, the existing literature provides a strong foundation for understanding the opportunities and challenges associated with integrating WhatsApp into the DELM program. Study findings contribute to the growing body of knowledge on the role of social media in enhancing learning experiences and professional development among educational leaders.

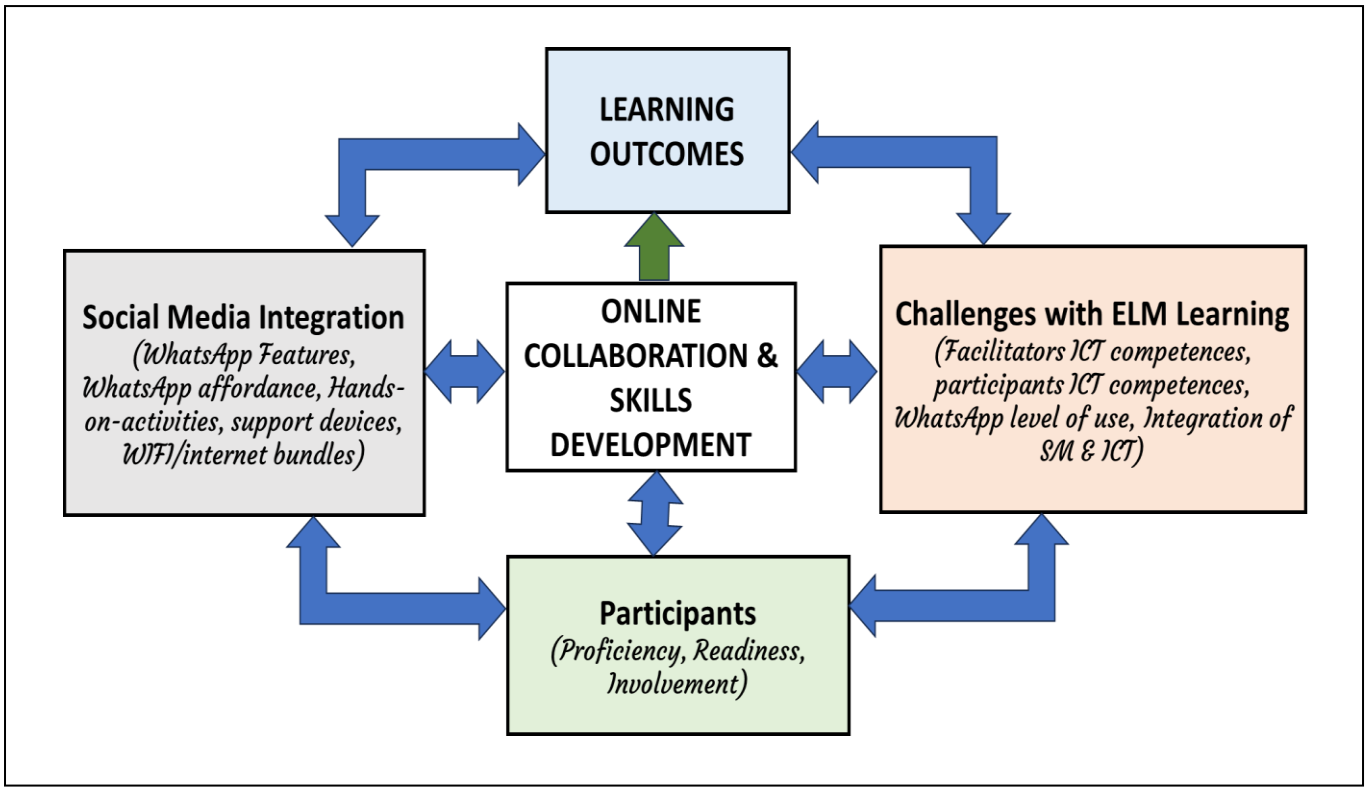



*Fig. 1. Conceptual Framework*

## III. METHODOLOGY

### *A. Research Method*

#### *1) Research Approach*

The study employed a mixed-methods research approach, which enabled a comprehensive understanding of the factors influencing educational leaders' engagement with WhatsApp as a learning tool [11]. This integrated design, combining quantitative and qualitative methods, allowed for triangulation of the findings, improving the reliability and validity of the research [9]. The mixed-methods approach was well-suited for exploring the complexities of digital learning environments and the multifaceted nature of online learning [6] [3].

#### *2) Research Design*

The research design for this study employed the Design-Based Implementation Research (DBIR) approach. The DBIR approach is well-suited for investigating the integration of technology, such as WhatsApp, into blended learning environments for educational leadership programs.

DBIR is an iterative, collaborative methodology that involves the following key steps:

1. Problem Statement: Researchers identify a persistent, complex problem of practice faced by a system which in this context is integration of social media for better blended learning by educational leaders in the DELM program.
2. Design Intervention: Based on the identified problem,
3. Implement: The designed intervention is then implemented within the authentic educational context.
4. Iterate: The DBIR approach follows an iterative process, with continuously evaluation, implementation, gather feedback, and refine the intervention based on the evidence collected.

The iterative, context-specific nature of DBIR allows researchers to continuously refine the technological integration based on participant feedback and observed outcomes. This, in turn, enhances the intervention's effectiveness and the researchers' understanding of the factors that influence its implementation [40]. Previous studies have demonstrated the ability of knowledge sharing through facilitated collaboration help form small professional learning communities among participants [2]. The method constitutes a short-term data collection cycle that informs on expectation and continuous refinement in subsequent cycles culminating to a long-term outcome, see Fig. 2 below.

Therefore, the DBIR approach was well-suited for this study, as it enabled the researchers to systematically investigate the integration of WhatsApp within the blended learning environment for the educational leadership program and make gradual improvements based on the evidence collected.

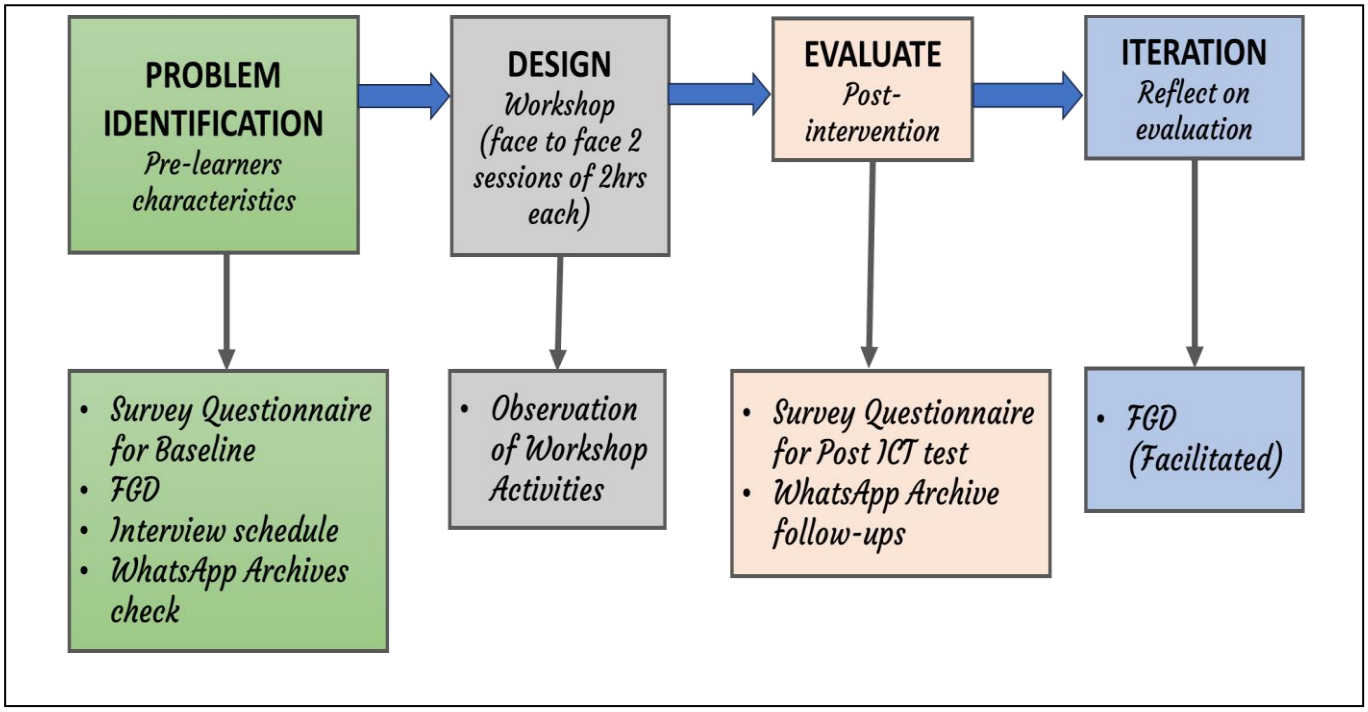



*Fig. 2. Shows data collection procedure at different stages*

*3) Research Site*

The research site involved a blended learning program that combines face-to-face instruction and virtual learning sessions. The cohort consisted of 26 participants, referred to as CPs, and 7 faculty members from the Aga Khan University (AKU) and the Kenya Education Management Institute (KEMI). The 26 CPs exhibited a diverse gender composition, with 21 females and 5 males, and they held various institutional leadership roles, including Head of Institution (HOI), Deputy HOI, and Senior Teachers. The social media platform WhatsApp was utilized in this blended learning program to support and inform the participants about upcoming online sessions. The choice of this research site was justified by the aim to understand the influence of social media, specifically WhatsApp, on formal learning [2].

*B. Data Collection and Analysis*

*1) Data Collection Procedure*

The study employed a systematic data collection approach to evaluate the outcomes of the post-ICT intervention and iteratively refine the research process, as shown in Fig. 2 above.

The Design-Based Implementation Research (DBIR) approach was an effective methodology for studying the introduction of WhatsApp in the DELM program. The DBIR approach utilized four levels: Problem Identification, Design Implementation, Evaluation, and Iteration refer Fig. 2. At each level, specific data, collection methods were employed to gather information relevant to the research questions.

The systematic and structured DBIR approach, with its focus on iterative design and evaluation, provided a robust framework for understanding the current use of WhatsApp in the DELM program and identifying opportunities for its effective integration.

In the Problem Identification phase, baseline surveys, focus group discussions (FGDs) with faculty, and interviews with CPs were conducted to assess the current digital skills of the trainees and understand how WhatsApp was being utilized in the DELM program, see table 2 (in the next page). Additionally, the content of the WhatsApp group chats archived during the workshop and follow-up period of 3 months (August to November 2023) were analyzed to assess the trend of its use to supplement the survey, FGDs and interview data. This immersive method allowed insights into learning experiences and enabled the interpretation of evolving community dynamics over time [24]. Moreover, this approach provided real-world observations that complemented the workshops [8].

During the Design Implementation phase, workshop activities and the WhatsApp group interactions were monitored as designed part of intervention to identify opportunities for introducing WhatsApp in DELM learning as observed in picture 1 in the results' section.

In the Evaluation phase, post-ICT feedback surveys were administered, and the WhatsApp archives were analyzed to further understand the impact of the intervention.

Finally, in the Iteration phase, the researchers engaged in reflection and data analysis to determine what interventions were necessary for effective WhatsApp learning in the DELM program. This involved, an interview with CPs and FGDs with faculty together with continued analysis of the WhatsApp archives.

TABLE 2: SUMMARY OF DATA, COLLECTION METHODS, PARTICIPANTS, AND RESEARCH QUESTION RESPONDED TO

| Step | DBIR Levels | Method of Data Collection | Participants | Research Question responded to |
|---|---|---|---|---|
| 1 | Problem Identification (Pre-intervention survey, to assess characteristics of the participants) | Baseline Survey questionnaire, FGD for Faculty, Interview for CPs. WhatsApp group chats | CPs, Faculty & Researcher | What are the trainees' current level of digital skills?<br>How is WhatsApp currently being utilized in the DELM program? |
| 2 | Design Implementation (Identifying opportunities) | Observation of Workshop activities,<br>A WhatsApp group designed Activities | CPs, Faculty & Researcher | What opportunities exist for the introduction of WhatsApp in DELM learning? |
| 3 | Evaluation (the Impact assessment of intervention) | The survey questionnaire for the post-ICT test,<br>WhatsApp Archive follow-ups | CPs & Faculty | What opportunities exist for the introduction of WhatsApp in DELM learning? |
| 4 | Iteration (Reflection on evaluation) | FGD for Faculty, interview with CPs, WhatsApp Archive | CPs & Faculty & Researcher | What intervention are necessary for effective WhatsApp learning in DELM? |

*Table by the Researchers*

The DBIR approach provided a comprehensive and structured way to study the introduction of WhatsApp in the DELM program, leading to a deeper understanding of the current usage and potential opportunities for effective integration. While the DBIR approach was effective in this study, it is important to note that specific methods and findings may not be directly transferable to other educational contexts without careful consideration of the local context and constraints.

*2) Data Analysis and Presentation of Findings*

The data included both qualitative and quantitative components obtained through the mixed-methods approach, as well as WhatsApp chat logs exported from groups.

The quantitative data, including numerical survey responses, were entered into IBM SPSS 26 statistical software. Descriptive statistics, t-tests, and chi-square tests were utilized to examine relationships between variables, such as WhatsApp usage patterns (graph 1), preferred content (graph 5), willingness for self-sponsored on remote data bundles (graph 7) and digital proficiency (graph 3).

Archived WhatsApp chat logs for groups were exported without media and analyzed to complement quantitative data collected. Chats from a general DELM wall for a period of three-months were analyzed and those developed during the workshop as well. The Jupyter Notebook machine language analysis tool in the Python environment developed the general wall output. As a machine language analysis tool, Jupyter Notebook uses codes to analyze the textual content of messages. The graph 4 that shows message frequency, weekly trends and timing of interactive discussions, was the output of the section of codes shown in Fig. 3 below.

In addition to Jupyter analytics Chat Stats 7.3.0.4 Application from the Google play store was used to generate the statics of workshop interaction, see graph 2 in section 4.2. In this case group chats were exported directly to the App that processed and gave the output. Complementary qualitative and quantitative analyses, along with the insights from the WhatsApp data, enabled a comprehensive understanding of WhatsApp usage, opportunities for integration, and perceived benefits towards the DELM program. This informed evidence-based recommendations for advanced integration of social media platforms in educational leaders' learning.

The qualitative data, such as narrative responses from participant interviews, FGDs, and open-ended questionnaire items, were transcribed and analyzed for codes responsible for thematic development using the ATLAS.ti qualitative data analysis software. This analysis using ATLAS.ti provided in-depth, contextual insights into the experiences of WhatsApp integration.

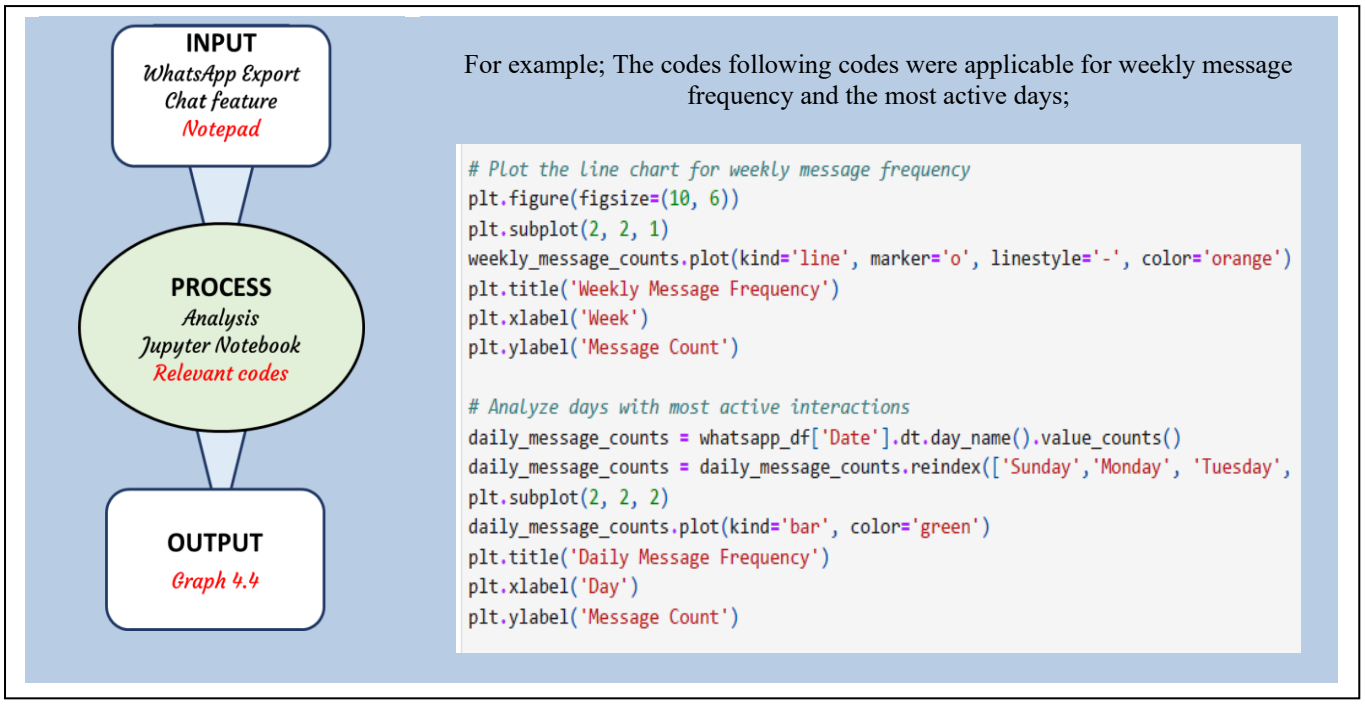



*Fig. 3. Shows, Input, Process, Output and involve code that result in part of graph 4.*

### C. WhatsApp Integration Intervention

The study designed an intervention to integrate WhatsApp as an additional platform for blended learning among the DELM participants involved in a work-study program. The methodology for this intervention component began with an initial workshop session that aimed to provide in-depth training and hands-on experience with using WhatsApp functionalities for educational purposes. The DELM Program Committee planned the ICT development course, which organized the workshop. The workshop's design was based on feedback from a baseline survey. This deliberate workshop experience with WhatsApp's features and educational applications was aimed at equipping the school leaders with the necessary knowledge, skills, and resources to effectively integrate WhatsApp as a blended learning platform within the DELM program.

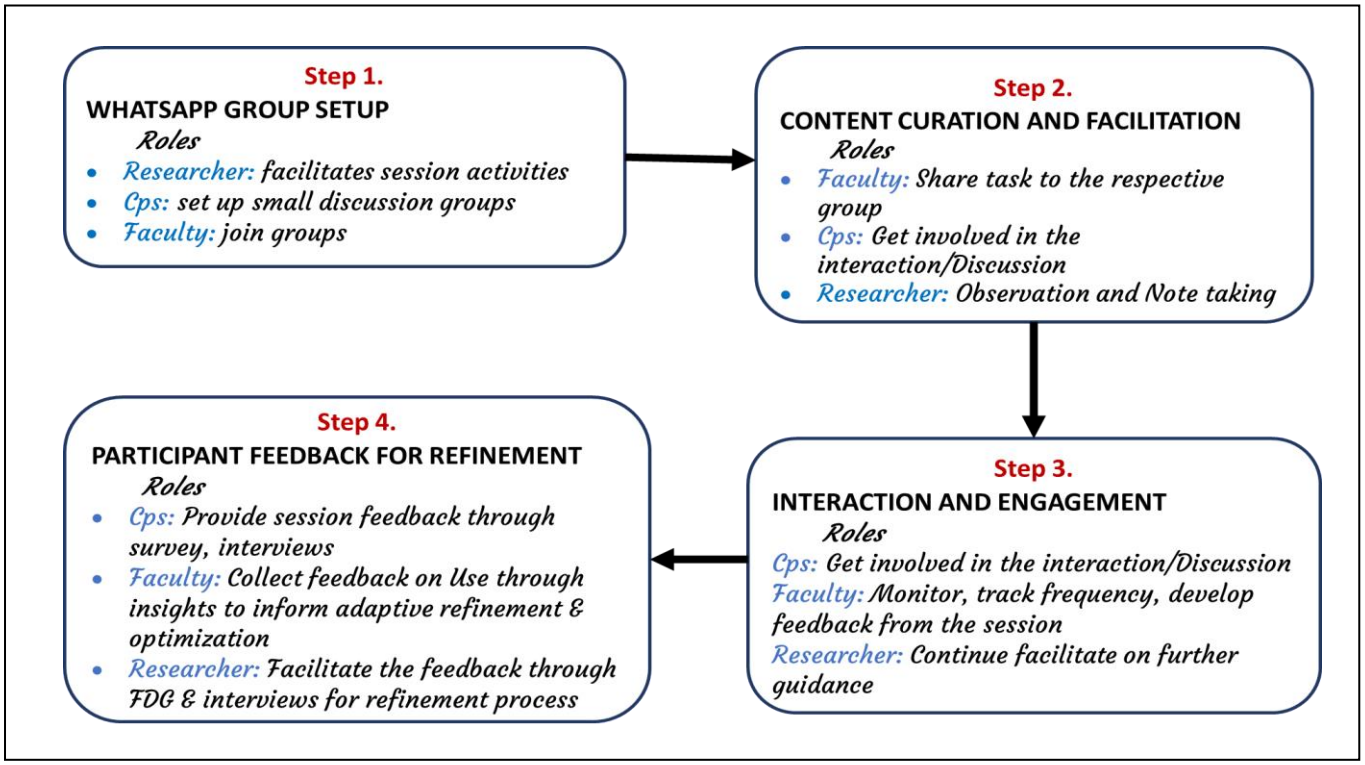



*Fig. 4. Showing steps and the role of CPs, Faculty and Researcher in the session procedure*

Faculty and CPs participating in the workshop were provided with internet WiFi access and a projector for comprehensive training on WhatsApp features and their educational applications. The workshop session incorporated a variety of facilitated learning activities to introduce the participants to WhatsApp's capabilities as evidenced in Fig. 4 above.

The intervention was successful in laying the groundwork for using WhatsApp as an additional platform for blended learning as described in the results section 4.2. below, but the long-term outcomes and impact on the school leaders' learning and collaboration would need to be further evaluated through ongoing monitoring and evaluation of the DELM program. Although the intervention provided a solid foundation for using WhatsApp, there may have been challenges or limitations in its implementation or adoption that were not fully addressed in this first cycle of DBIR description.

### *D. Trustworthiness and Validity*

The study employed several strategies to ensure the trustworthiness and validity of the study findings. Triangulation was used to enhance the credibility of the results [28]. Data was collected from multiple sources, including WhatsApp platforms, observational data, baseline surveys, post-ICT feedback questionnaires, and insights from interviews and FGDs. This triangulation allowed different perspectives to converge and provided a more comprehensive understanding of participants' experiences. The qualitative and quantitative data collection methods were utilized, enabling the establishment of a well-rounded view through the complementary strengths of each approach [34]. To ensure accuracy, participant interpretations and preliminary findings were shared as part of the member verification process and ensure their voices were authentically represented [20]. Participants were asked to provide feedback to validate that the results adequately captured their perspectives. The use of multiple data sources, triangulation, and mixed methods, along with member checking, strengthened the trustworthiness and validity of the study findings. This multifaceted strategy ensured that outcomes adequately represented the viewpoints and experiences of the participants.

### *E. Data Ownership and Privacy on WhatsApp Platform*

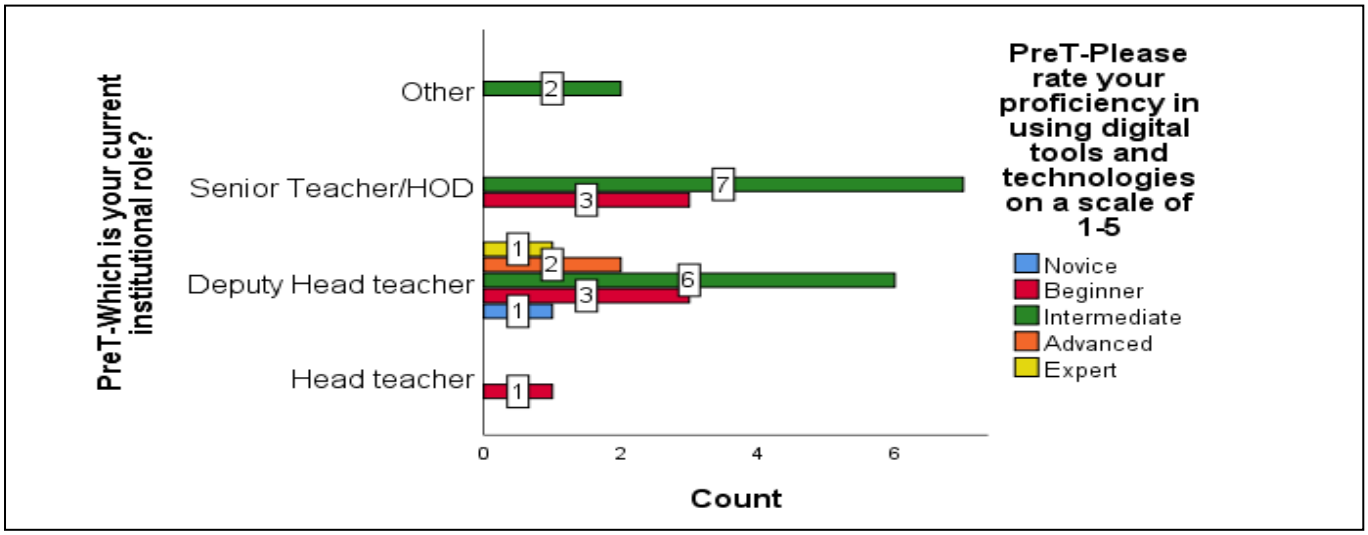
The study accessed WhatsApp data from a DELM program group that included faculty members and course participants. The group administrator provided access, and participants had given consent for the researcher's presence. The data analyzed came from the general WhatsApp group as well as smaller study groups formed during the workshop. While acknowledging the significance of data ownership and privacy, the study notes that data stored on external platforms like WhatsApp is subject to the platform provider's policies and practices. A comprehensive investigation into WhatsApp's specific data policies was beyond the scope of this study.

Future research should explore the data ownership and privacy landscape in more depth, considering factors like data, privacy policies, encryption protocols, and adherence to data protection regulations on the WhatsApp platform. By recognizing these limitations and future research directions, the study highlights the importance of addressing data ownership and privacy concerns when integrating platforms like WhatsApp into educational programs.

## IV. Results and Findings

### *A. Participant Demographics*

The majority of the participants self-rating their digital proficiency at an "Intermediate" level. In terms of digital proficiency, most participants (15 out of 26) self-rated as having an "Intermediate" level of digital skills, with a smaller number identifying as "Beginner" (7), "Advanced" (2), and "Expert" (1). The majority of participants (13 out of 26) held the position of Deputy Head teacher, while 10 were Senior Teachers/Head of Department (HOD), and 1 was a Head teacher graph 1 below.




*Graph 1: Additional information on the demographics of the participants'*

The reported findings were corroborative with insights from the faculty and CPs;

*Excerpt 1a*

"They are different levels. Yeah, probably majority 2 to 4, Sort of intermediate, Yeah, 3." (FGD, Faculty 1).

*Excerpt 1b*

"I consider my digital skills to be at an intermediate level" (An Interviewee, Course Participant 2B).

*Excerpt 1c*

"I would say I have an intermediate level of digital skills. I can navigate through various applications and websites with ease, but there is always room for improvement" (An Interview, Course Participant 2A).

Many participants described their skills as 'intermediate level' as illustrated in graph 1 and expressed by both CPs and Faculty (Excerpt 1a, b, c). While one participant, refer Excerpt 1c, acknowledged that they could navigate digital tools with ease. Notably, the CP showed preliminary flexibility and readiness to build on their current level of proficiency through acknowledgment of a room for improvement, although this may not be generalizable for the entire group. This multifaceted group of educational leaders, proactively embraced digital tools, including social media, aligning with research that emphasizes the role of digital literacy in empowering leaders to integrate technology effectively [32] [2].

The predominance of "Intermediate" self-rated digital proficiency, combined with the diverse leadership roles and pro-active embrace of digital tools by the participants, provides an important context for understanding their experiences and learning outcomes within the blended learning program. Examining how participants with varying digital competency leverage social media within the blended learning program offers nuanced insights to inform professional development aimed at cultivating digital skills for impactful, technology-enabled change [25].

Although the skewed gender distribution and diverse participant pool could be considered a potential limitation, as it may not represent the broader educational leadership landscape, diverse experiences and perspectives offered by the participants demonstrates a valuable strength. In conclusion, the participant demographics, including their pro-active embrace of digital tools, reinforce the necessity of digital literacy development for education leaders, especially in the context of blended learning programs.

### *B. Workshop outcome*

The workshop successfully fostered participants' competencies in leveraging WhatsApp for collaborative learning and discussion. Prior to the workshop, participants needed more experience engaging in collaborative discussions and building on each other's ideas. To address this, the workshop employed a highly engaging, constructivist-based approach that encouraged active participation. A constructivist, hands-on approach to learning emphasizes the learner actively constructing their own understanding through experiential activities, rather than passively receiving information [5] [39]. As shown in picture 1, participants actively engaged in group discussions, sharing resources and collaboratively exploring how WhatsApp could be used for educational leadership and administrative tasks. This allowed them to directly experience and experiment with technology.

(a)

(b)

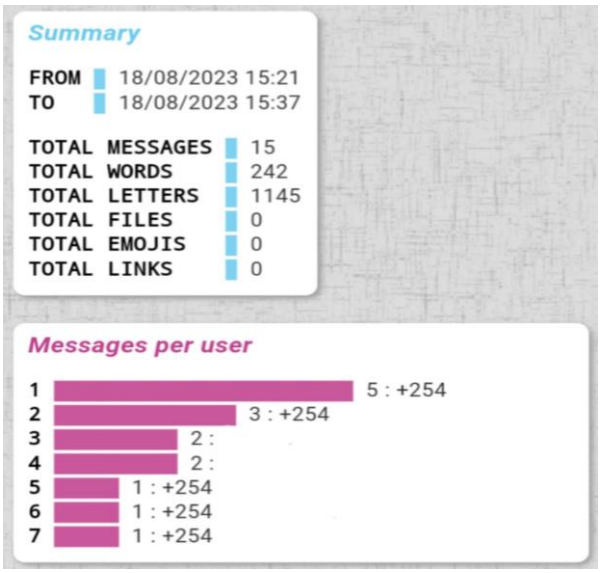

*Picture 1:* Shows participants engaged in iterative workshop activities focused on navigating through WhatsApp features and prototyping solutions. (a) Shows participants in face-to-face prototyping groups during the workshop. (b) Shows a screenshot of the section of the text exported to Chat Stats 7.3.0.4 App. from Group BQ (pseudonym) WhatsApp group discussion during the intervention workshop, for interaction, see Graph 2 above.

The workshop utilized a learner-centered methodology, empowering participants to actively construct their own knowledge and solutions. As evidenced in the section of exported text of participants in group BQ, the participants were given opportunities to prototype and iterate on their ideas, as seen in the image picture 1 (b) above. This hands-on, constructivist approach aimed to make the learning more meaningful, relevant and memorable. This is line research by [11] that supports the use of social media to develop open educational resources.

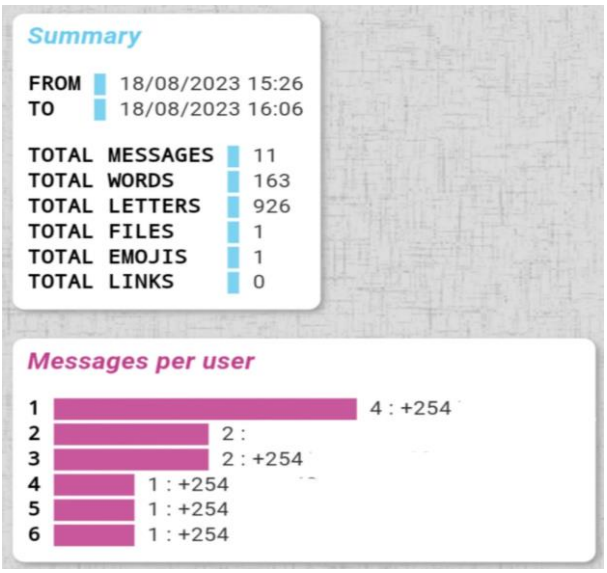
As further illustrated in graph 2, the interactive nature of the group discussions highlighted the participants' active engagement and their ability to build on each other's contributions. Therefore, by emphasizing this constructivist, experiential learning model, the workshop successfully developed the participants' essential collaborative skills in leveraging WhatsApp for their professional context.

The findings summarized in table 3 below indicate that participants demonstrated significant improvements in their collaborative skills and their ability to envision practical applications of WhatsApp for educational leadership and administration. Participants were able to engage in more meaningful discussions, build on each other's ideas, and provide constructive feedback to their peers.

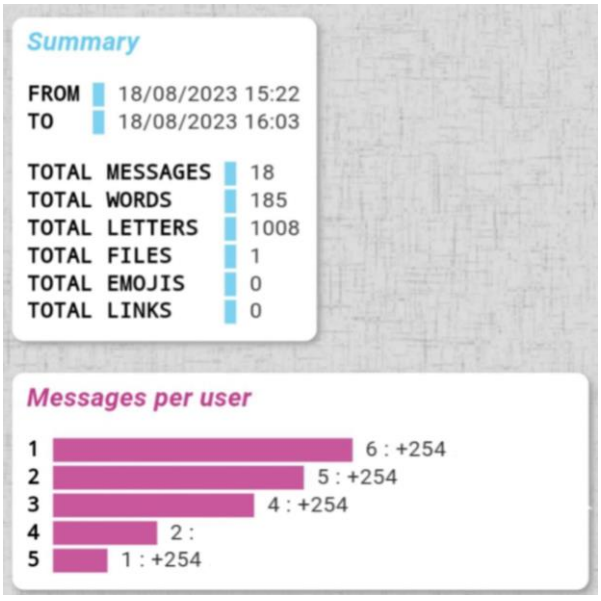
Group BX



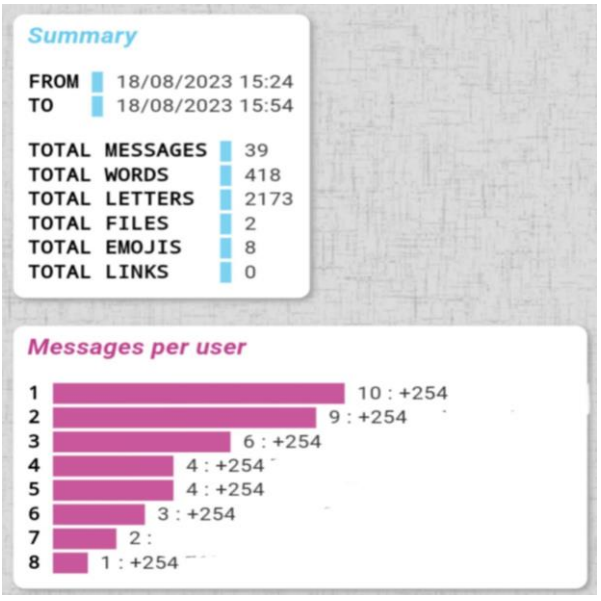

Group BT




Group BQ




Group BZ




*Source:* Chats Interaction for groups (pseudonyms & user anonymized), Statistics obtained using Chat Stats 7.3.0.4 App.

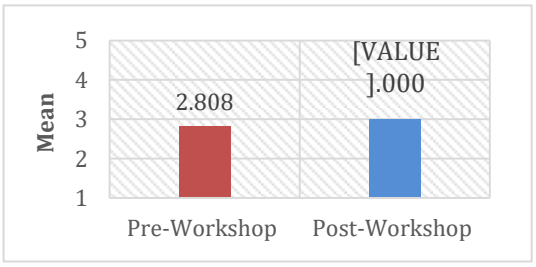
*Graph 2: Shows the interactive nature of each group engaged in collaborative discussion on a given task during the workshop*

TABLE 3: COMPARISON OF CPS' COMPETENCIES BEFORE AND AFTER WORKSHOP

| Competency | Before Workshop | After Workshop |
|---|---|---|
| Engaging in collaborative discussions | Participants were able to participate in discussions, but their collaboration was limited. | Participants actively engaged in collaborative discussions, building on each other's ideas. |
| Envisioning practical applications of WhatsApp | Participants needed more ideas about how to use WhatsApp for specific administrative tasks. | Participants could envision practical applications of WhatsApp in addressing specific administrative challenges. |
| Providing peer feedback | Participants needed more experience providing peer feedback. | Participants were able to provide constructive feedback to their peers. |

*The table contain summarized findings from the workshop intervention*

The digital skills and confidence of the workshop participants also improved significantly as a result of the intervention. Prior to the workshop, participants self-reported their digital proficiency to be in the "2 to 4" on a 5-point scale, refer graph 1 above. However, the post-workshop assessment revealed a statistically significant increase in participants' self-reported digital proficiency, from a pre-test mean of 2.808 to a post-test mean of 3.000 (SD=0.849), t (25) =17.874, p<0.001. This represents a 0.192 increase, indicating the workshop effectively developed participants' skills and confidence in using digital tools, graph 3 below.




*Source:* Baseline Survey & Post-ICT Questionnaires Analysis by SPSS, Graph Developed by MS-*Excel*

*Graph 3: Shows a self-rated proficiency in using digital tools and technologies related to WhatsApp*

This study emphasizes the necessity of equipping educational leaders with robust digital literacy competencies, including the ability to leverage digital tools like WhatsApp for collaborative learning, problem-solving, and administrative tasks. The workshop's practice-based learning opportunities effectively fostered the development of these essential skills, empowering leaders to drive an impactful, technology-enabled change within their institutions. Therefore, based on technology integration increasing in educational settings, there is a need for leaders to have skills in modeling, incorporating, and promoting digital tools within their institutions (Brown, 2021).

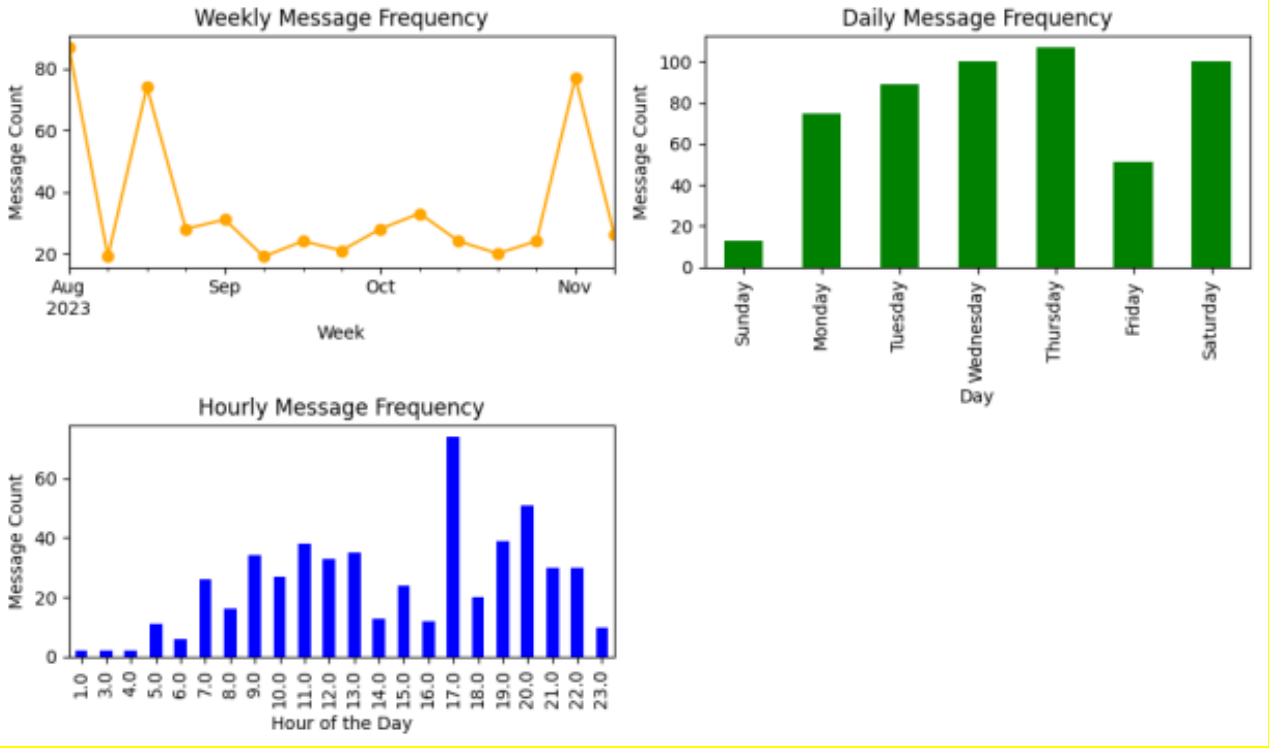
The workshop concluded that giving leaders opportunities to actively engage with platforms like WhatsApp can significantly improve their ability to use technology for collaborative learning, problem-solving, and administrative tasks. Findings suggest active exploration of digital tools notably enhances leaders' skills in applying technology for important job functions. This aligns with the research emphasizing the need for educational leaders to possess the digital literacy skills required to drive an impactful, technology-enabled change within their institutions, regardless of their specific roles or backgrounds.

### *C. WhatsApp Usage Patterns: An opportunity for Extended Blended Learning*

The integration of WhatsApp has the potential to extend learning opportunities beyond the traditional face-to-face classroom setting for educational leadership programs. The study findings include;

1. The data presented in graph 4 (next page) illustrates the weekly and daily usage patterns of the DELM WhatsApp groups over the 3-month study period. At the weekly level, the graph reveals periodic spikes in activity that coincided with important course milestones. Further, the average daily message frequency, with increased activity from Monday through Thursday and on Saturdays, and the highest interaction occurring in the evening between 5 pm and 8 pm.

   - The weekly engagement patterns captured in graph 4 underscore the versatility of WhatsApp and its ability to sustain learner interaction throughout the duration of the blended learning program.
   - The daily ebb and flow of WhatsApp usage, with participants most actively engaged on weekdays and weekends, suggests the platform can accommodate learners' schedules and provide opportunities for continuous collaboration.
   - Furthermore, the data reveals that the evening hours between 5 pm and 8 pm see the highest levels of WhatsApp interaction, highlighting the potential for WhatsApp to enable asynchronous learning and support educational leaders outside traditional work hours.

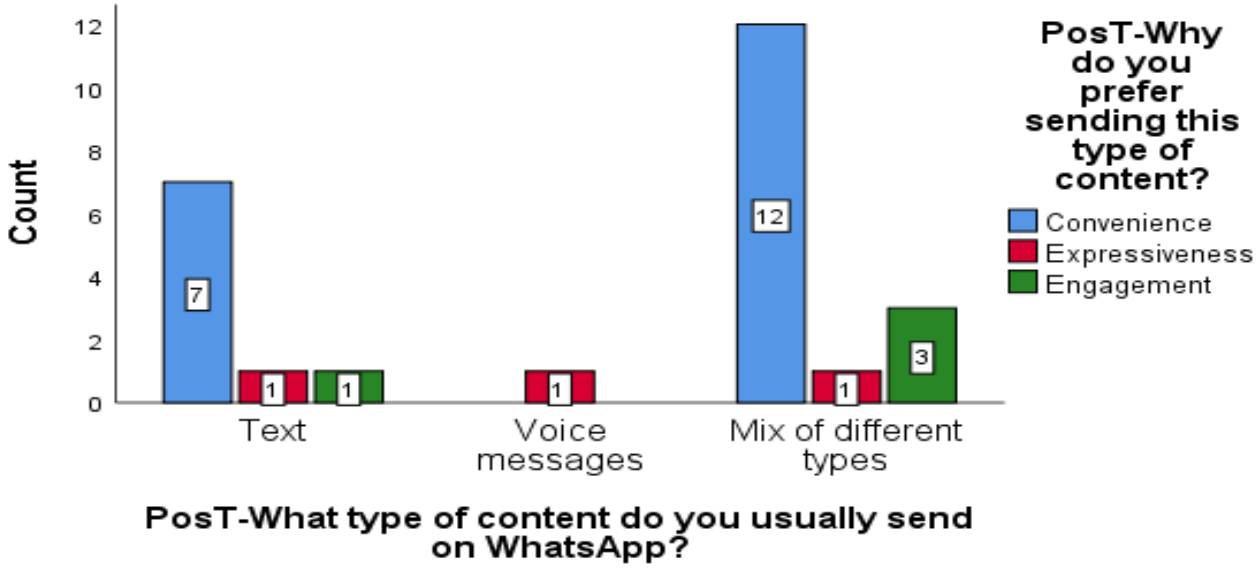



*Source:* Analysis Output from Jupyter Notebook

*Graph 4: Shows weekly, daily and hourly message frequency*

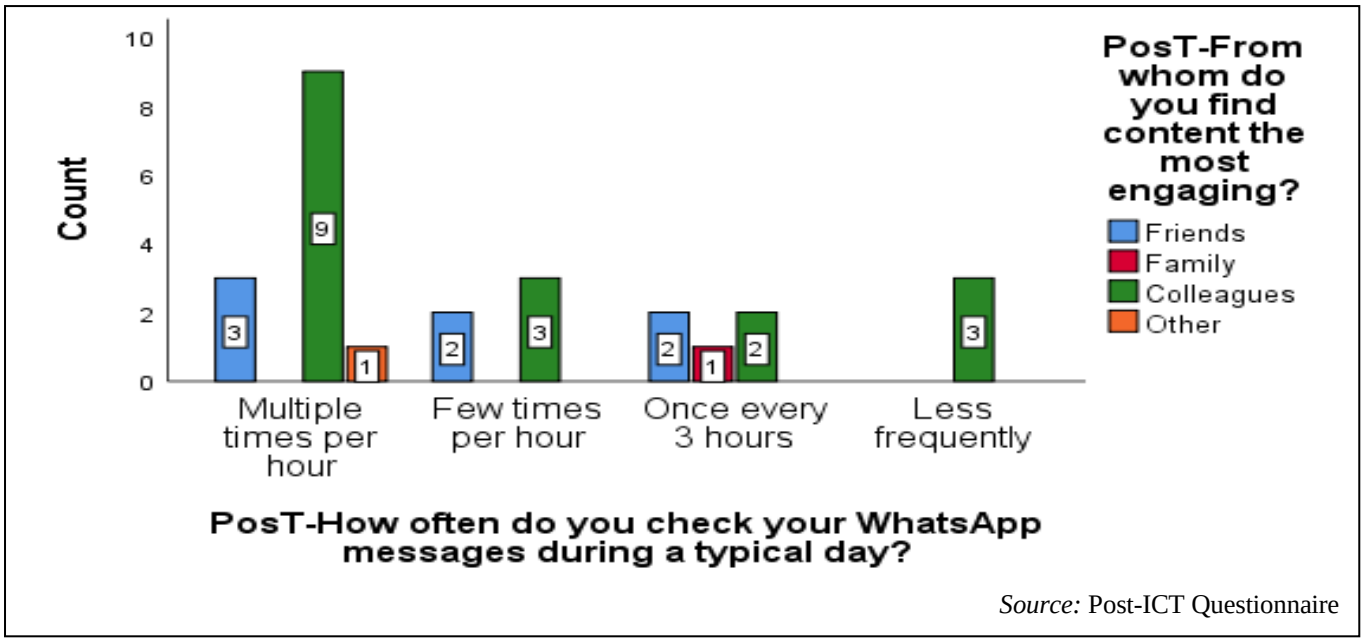
These fluctuations in the user engagement underscore the versatility of WhatsApp and its ability to sustain blended learning

2. Participants reported using WhatsApp to share a diverse range of multimedia resources (graph 5). The data showed a preference for a mix of different content types, including text, images, videos, and audio files. Further, participants reported convenience, expressiveness, and engagement as major reasons for their content sharing preferences. The graph indicates that most participants (12) prefer sending a mix of different content types, emphasizing the convenience of the WhatsApp platform. These insights highlight the diverse content preferences of participants on WhatsApp, with convenience being a predominant factor influencing their choices.




*Source:* Post-ICT Questionnaire

*Graph 5: Cross-tabulation comparing the content mostly sent to the preferred reasons.*

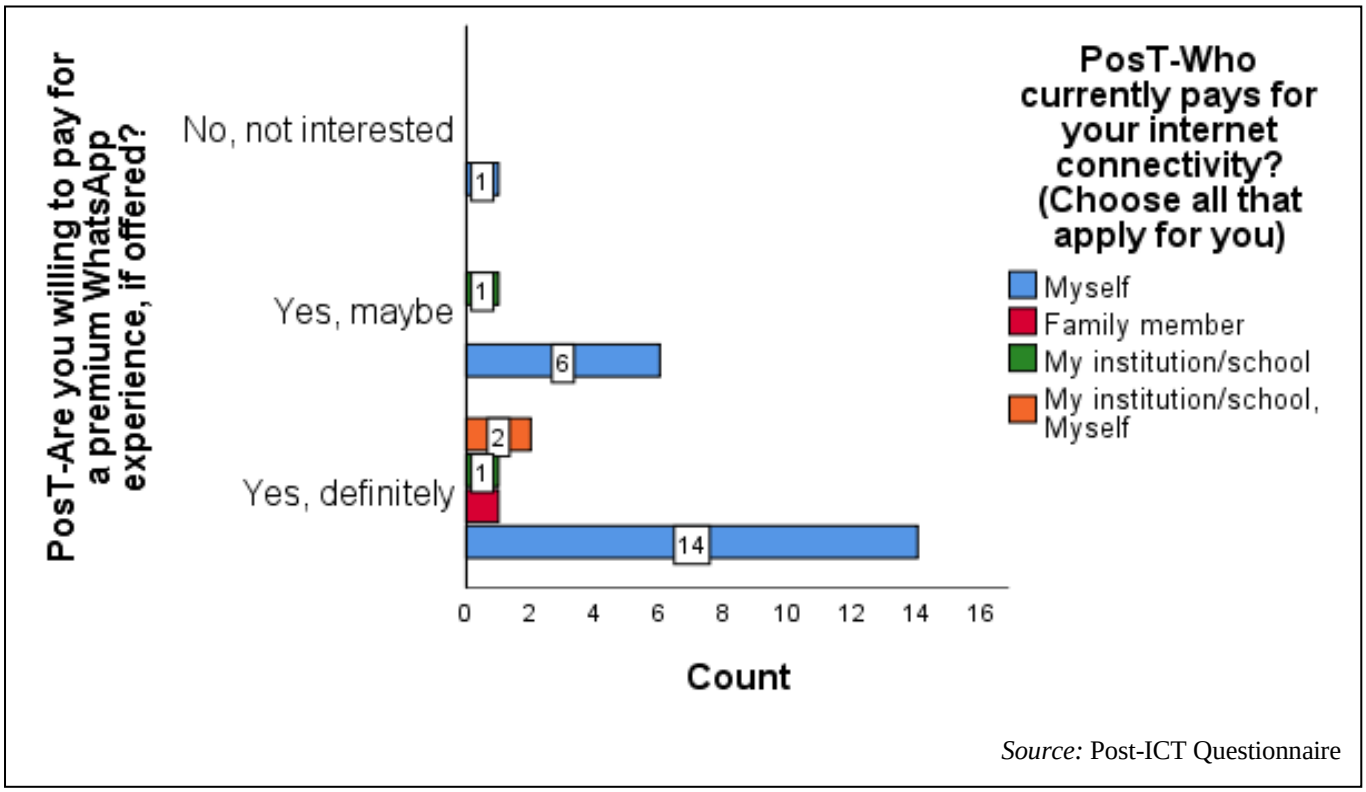



*Source:* Post-ICT Questionnaire

*Graph 6: Cross tabulation showing the daily engagement frequency and sender of the content.*

3 Further insights from the frequency of interaction per hour analysis illustrated in graph 6 above show that a significant proportion of respondents (13 out of 26) check their WhatsApp messages multiple times per hour, indicating a high frequency of interaction with the platform. When considering the sources of engaging content, most respondents (17 out of 26) find content from colleagues most engaging, suggesting the prominence of professional or work-related interactions on WhatsApp. These findings underscore the platform's multifaceted role, serving as a personal communication tool and a hub for professional engagement.

4 The majority of participants expressed a willingness to pay for a premium WhatsApp-based learning service, indicating the perceived value of the platform's flexibility and convenience see graph 7 below. This suggests that students saw significant benefits in the WhatsApp-enabled learning experience and were open to investing in a more robust version of the service.




*Source:* Post-ICT Questionnaire

*Graph 7: Shows a comparison of internet sponsors and the willingness to pay for a premium WhatsApp Learning*

This willingness to invest in an enhanced version of the platform suggests that participants highly valued the flexibility, convenience, and educational benefits provided by the WhatsApp integration.

The claims warrant that versatility and accessibility of WhatsApp, as demonstrated by the fluctuations in the user engagement and the preference for flexible learning schedules, suggest that it can effectively support blended learning approaches that extend beyond the traditional classroom. One respondent interestingly emphasized the importance of collecting regular feedback from users to inform the ongoing refinement and adaptation of WhatsApp integration, as recorded;

*Excerpt 2*

"Regular surveys and feedback collection from participants can be instrumental. This data can then be used to adapt and enhance the intervention as needed, ensuring it aligns with the evolving needs of its users" (An Interview, Course Participant 2A).

A faculty member reverberated this sentiment in an insight recorded;

*Excerpt 3*

"Faculty training is key. Make sure instructors are comfortable with the platform and its features before widespread adoption" (FGD, Faculty 2).

The existing literature on the benefits of social media integration in educational contexts, such as improved collaboration, resource sharing, and instructor-learner interactions, provides further support for the potential of WhatsApp to enhance learning experiences [32] [12]. These positive perceptions were further substantiated by the finding that the majority of participants expressed a willingness to pay for a premium WhatsApp-based learning service. This is in line with literature that shows that payment depends on the benefit attached to the educational service provided and convenience of scheduling [38] [41]. While the integration of WhatsApp has shown promise, long-term impacts on student engagement, knowledge retention, and overall learning outcomes require further investigation.

Some critics may argue that the reliance on social media platforms like WhatsApp oversimplifies the complexity of educational leadership development. However, the study findings underscore the need for a comprehensive approach that addresses both learner and instructor perspectives. To optimize the educational potential of WhatsApp integration, the study highlights the importance of adopting an adaptive, user-centric approach as said by one of the CP (Excerpt 2). This includes regularly collecting feedback from participants to inform the ongoing refinement of the platform's implementation and providing support to ensure instructors are trained and comfortable with the tool and its features as insighted by one of them (Excerpt 3). Therefore, by leveraging the versatility and accessibility of WhatsApp, educational leadership programs can extend learning opportunities and empower participants to develop critical digital literacy skills for innovation, collaboration, and continuous learning within their institutions.

### *D. Summary of the key Findings*

The study found out that social media presents key benefits for leadership, an effective blended learning experience;

1. Constructivist-based Approach Fostered Collaborative Learning was effective in empowering participants to leverage WhatsApp for collaborative learning and discussion.
2. Experiential Learning Strengthened Engagement and Application through hands-on, experiential activities that enabled participants to actively construct their own knowledge and solutions, enhancing the relevance and applicability of the learning.
3. Learner-Centered Methodology Improved Collaboration and Feedback since the participants demonstrated collaborative skills, their ability to envision practical WhatsApp applications, and their capacity to provide constructive peer feedback.
4. Enhanced Digital Skills and Confidence for Institutional Impact through a significant improvement of the participants' digital skills and confidence, equipping the educational leaders to drive impactful, technology-enabled change within their institutions.

Finding further highlights Opportunities important in Blended Learning for Educational Leaders as follows;

1. WhatsApp's Versatility Supports Flexible Collaboration: The fluctuations in user engagement patterns highlight WhatsApp's versatility in accommodating learners' schedules and enabling continuous collaboration throughout the blended learning program.
2. Diverse Multimedia Sharing and Convenient Access: Participants leveraged WhatsApp to share a wide range of multimedia, resources, with convenience being a key factor in their content sharing preferences, showcasing, the platform's ability to cater to diverse learning needs.
3. Perceived Value and Willingness to Pay for Enhanced WhatsApp-based Learning: The majority of participants expressed a willingness to pay for a premium WhatsApp-based learning service, indicating the perceived value of the platform's flexibility and the educational benefits provided by its integration.

## V. Discussion

### *A. WhatsApp in Blended Educational Leadership Programs,*

The blended learning program should strategically incorporate social media to support the varied digital proficiency levels and leadership roles of the participants. The majority of participants (15 out of 26) self-rated their digital proficiency at an "Intermediate" level, with smaller numbers identifying as "Beginner", "Advanced", and "Expert" as illustrated in graph 1. The participants held diverse leadership roles, including Deputy Head teachers, Senior Teachers/HODs, and a Head teacher [2]. Insights from the faculty and participant interviews corroborated the self-reported digital proficiency levels, with many describing their skills as 'intermediate' and one participant acknowledging their ability to navigate digital tools while also recognizing room for improvement (Excerpt 1c). Participants with varying digital competency levels and diverse leadership roles would benefit from a tailored approach to incorporating social media within the blended learning program.

Research has shown that;

a) Intermediate users can leverage social media to enhance their learning and professional development [25].

b) Beginner users may require more structured guidance and support to build their comfort and confidence with using social media for learning [32].

c) Advanced users can be empowered to serve as peer mentors, sharing their expertise and modeling effective social media integration [25].

d) Diverse leadership roles can foster cross-pollination and contribution of ideas and the best practices through the use of social media [11] [2].

By considering the participants' digital proficiency levels and leadership roles, the blended learning program can be designed to strategically incorporate social media in a way that supports the varied needs and learning styles of the cohort. While some participants may be hesitant to use social media for learning, a well-designed program that addresses their concerns and provides adequate support can help overcome these barriers.

Incorporating social media in a strategic and tailored manner can maximize the potential of the blended learning program to enhance the overall learning outcomes and professional development of the participants.

### *B. Boosting Digital Proficiency through Workshops*

The findings from the study demonstrate the significant impact of the targeted workshop intervention in enhancing the digital proficiency and collaborative skills of the participating educational leaders. Research has shown that a constructivist, hands-on approach to learning, such as the one employed in the workshop, is effective in fostering participants' competencies in leveraging digital tools like WhatsApp for collaborative learning and discussion [5] [39].

The pre-workshop assessment revealed that participants had some existing digital skills, typically rating themselves in the "2 to 4" range on a 5-point scale, refer graph 1. However, the post-workshop assessment showed a statistically significant increase in their self-reported digital proficiency, with the mean score rising from 2.808 to 3.000, as evidenced in graph 3. The constructivist, learner-centered methodology used in the workshop was key to its success. By actively engaging the participants in group discussions, resource sharing, and collaborative prototyping activities, the workshop empowered them to directly experience and experiment with the technology, allowing them to construct their own knowledge and solutions [13] [39].

The findings indicate that the workshop helped the participants envision practical applications of WhatsApp for educational leadership and administration tasks, reflecting the power of social media platforms to contribute to a blended learning model, where work-study and institutional roles can be enhanced through the integration of collaborative digital tools [46]. While the participants had some existing digital skills prior to the workshop, the significant increase in their self-reported proficiency after the workshop suggests that the targeted intervention was effective in developing their competencies in using digital tools like WhatsApp.

These outcomes underscore the importance of equipping educational leaders with robust digital literacy competencies, including the ability to effectively integrate and champion the use of digital tools within their institutions. As technology becomes increasingly pervasive in educational settings, it is crucial for leaders to possess the skills to model, integrate, and leverage digital platforms like WhatsApp for collaborative learning, problem-solving, and administrative tasks.

### *C. Personalized Learning Opportunities*

The integration of WhatsApp into the DELM program has demonstrated the platform's potential to extend learning opportunities beyond the traditional face-to-face classroom setting for educational leadership programs. Study findings provide valuable insights into how participants engaged with the WhatsApp-enabled blended learning approach. The weekly and daily usage patterns captured in graph 4 underscore the versatility of WhatsApp and its ability to sustain learner interaction throughout the duration of the blended learning program. The periodic spikes in activity coinciding with important course milestones suggest that participants leveraged the platform to stay engaged and connected, even during critical periods of the program [32]. Furthermore, the consistent weekday usage with peaks in the evening hours between 5 pm

and 8 pm highlight the platform's potential to accommodate learners' schedules and provide opportunities for asynchronous collaboration and learning outside of traditional work hours [12].

Graph 5 illustrates the diverse range of multimedia resources that participants preferred to exchange, revealing their content sharing preferences. It shows a strong preference among participants for the convenience and expressiveness afforded by the WhatsApp platform. This diversity of content types aligns with the literature on the educational benefits of social media integration, which emphasizes the ability to enhance collaboration, resource sharing, and instructor-learner interactions [31] [29]. The analysis of participant engagement frequency and content sources, presented in graph 6, further reinforces the multifaceted role of WhatsApp, serving as both a personal communication tool and a hub for professional engagement. The finding that the majority of respondents find content from colleagues most engaging suggests the prominence of work-related interactions, underscoring the potential of WhatsApp to foster a sense of community and collaboration within the DELM program.

Notably, the willingness of participants to pay for a premium WhatsApp-based learning service, as shown in graph 7, indicates the perceived value and benefits of the platform's integration. This aligns with research suggesting that payment for educational services is directly related to the perceived benefits and convenience of the offering [38] [41]. While the integration of WhatsApp has shown promise, the study also highlights the importance of adopting an adaptive, user-centric approach. Participants emphasized the need for regular feedback collection and continuous refinement of intervention to ensure it aligns with the evolving needs of its users. Additionally, comprehensive instructor training was identified as a crucial factor to enable widespread adoption and successful integration of the WhatsApp platform.

Overall, the blended learning program should strategically incorporate social media to support the varied digital proficiency levels and leadership roles of the participants, maximizing the program's potential to enhance overall learning outcomes and professional development.

## VI. Conclusion

The study demonstrates that integrating WhatsApp into blended learning programs for educational leaders holds significant promise. WhatsApp's ubiquity and engagement patterns within the program highlight its ability to foster collaboration, resource sharing, and continuous professional development. The targeted workshop effectively enhanced participants' digital proficiency, laying the groundwork for technology-driven innovation in educational leadership. Furthermore, WhatsApp's flexibility aligns with personalized learning needs, as evidenced by fluctuations in the user engagement corresponding with course demands. Participants valued the platform's convenience, community feel, and perceived a willingness to invest in a premium service.

## VII. Recommendations

To leverage these benefits, educational leadership programs can:

- Establish WhatsApp groups dedicated to fostering community and communication.
- Encourage resource sharing, concept clarification, and collaborative work.
- Utilize multimedia features for distributing materials, live discussions, and support.
- Develop Comprehensive digital competency frameworks for educational leaders
- Explore premium services with enhanced features and personalized support.
- Provide digital competency training for both learners and faculty
- Develop user-centric design approaches to refine integration continuously.
- Continuously monitor and evaluate WhatsApp usage and perceived value to inform program improvements.

These strategies can empower educational leadership programs to create more engaging, flexible, and effective blended learning experiences, preparing leaders for 21st-century challenges.

## VIII. The Limitations of this Study

Although the study found key benefits and opportunities, as highlighted in section 4.4, for blended leadership learning through social media integration, there are important limitations that must be acknowledged;

- Only short-term, self-reported outcomes were assessed immediately after the single intervention. Long-term impacts and sustained effectiveness remain unknown.
- The small sample of 26 leaders from one institution limits generalizability of findings to other contexts and populations.
- Exclusive reliance on self-reported data, without objective usage or skills metrics, introduces potential response bias that leads to the questioning of validity.
- Lack of a control group precludes making definitive causal claims, as other unmeasured factors could explain changes.
- Narrow focus on participant perspectives without considering instructor and institutional views constrains contextualization.

While preliminary results suggest promising supportive social media importance in blended

learning, these limitations significantly temper conclusions and therefore need for additional studies.

## IX. Future Research

This study provides preliminary insights but limitations necessitate further research. Specifically:

- Long-term follow up to evaluate sustained impacts over time.
- Larger, diverse samples from multiple settings for generalizability.
- Mixed objective/subjective methods can validate self-reported findings.
- Control groups allow for robust causal inferences.
- Consider broader perspectives for full context.
- Comparative social media platform studies identify the best practices.

Therefore, more research is needed to fully understand the impacts of social media on blended leadership learning before firmly establishing the conclusions. Despite positing benefits, this exploratory study highlights need for more rigorous investigation to substantiate claims regarding models' effectiveness. Nonetheless, findings provide useful initial insights for future refinement towards strengthening leadership development and further inform best practices for social media-enabled blended learning.

## Acknowledgment

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