Unlocking ESP Learners' Leadership and Higher-Order Thinking Skills through Whatsapp Community of Practice

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ABSTRACT

This study investigates the relationship between the WhatsApp group, an instant messenger application as a community of practice platform (knowledge management, regular interactions, ease of using technology, and sense of belonging) and English for Specific Purposes (ESP) learners' leadership and higher-order thinking (HOT) skills. The current study also examines how participation in the community of practice through the WhatsApp group can enhance leadership and HOT skills for male and female learners. 197 ESP learners participated in the five-point Likert scale questionnaire. The SPSS-AMOS analysis showed that knowledge management, regular interaction, and a sense of belonging significantly enhance learners' leadership and HOT skills. The results also showed that male learners increased their leadership skills while female learners excelled in the HOT skills by the WhatsApp community of practice. This study has significant educational implications, particularly in emphasizing essential measures when developing an ESP curriculum to prepare learners for their future careers.

Keywords: Community of practice, English for Specific Purposes, Gender, Higher-order thinking skills, Leadership skills, WhatsApp

Introduction

The 21st-century learning has ushered in new teaching and learning in virtual environments. The COVID-19 outbreak has hastened this shift, as governments have mandated the transition from physical to virtual classrooms. Today, virtual learning has become an increasingly important tool in higher education, offering quality education to learners worldwide.

Nevertheless, literature shows that learning solely in the virtual environment can cause stress, marginalization, disengagement, and frustration for many learners, including ESP learners (Ghamrawi, 2022; Mayoob, 2020). Educators have also expressed difficulties in bringing all learners together and ensuring their participation in online settings (Ghamrawi, 2022; Pham & Nghiem, 2022). Pham and Nghiem (2022) highlighted that these difficulties stem from inadequate technical training and pedagogical constraints, eventually affecting the

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development of learners' employability skills in virtual learning environments, including English for specific purposes (ESP) learners (Mahyoob, 2020).

This study delves into the effectiveness of WhatsApp within a Community of practice (CoP) as a transformative digital tool, specifically aiming at mitigating the challenges mentioned above and fostering the development of ESP learners' employability skills, particularly leadership and higher-order thinking (HOT) skills.

ESP, designed to equip learners with specific content knowledge and skills (Robinson, 1991), faces challenges in virtual settings. Hatane (2009) expressed concerns about the difficulties in developing employability skills such as communication, teamwork, leadership, self-management, and digitalization among employees in a small organization through virtual learning environments. The limitations, such as poor internet connectivity and employees' lack of interest in e-learning, remain a big challenge in developing employability skills in small organizations (Hatane, 2009). The idea of a virtual CoP, uniting learners through the Internet with shared interest and expertise, offers an innovative solution to these challenges (Andrienko, 2017; Bates, 2014; Della & Jurberg, 2019; Ekici, 2017; Sibbald et al., 2022; Wenger et al., 2002).

While the connection between social media and employability skills, such as leadership, HOT, communication, and teamwork, have been studied (Bourhis et al., 2005; Chrisentary & Barett, 2015; Goncalves, 2021; Della & Jurberg, 2019), there is a gap in the literature regarding the impact of CoP by using WhatsApp on the development of ESP learners' leadership and HOT skills.

WhatsApp is an instant messenger application that seems prevalent in today's society due to its ability to stay connected by sharing videos, pictures, texts and voice messages (Alouch et al., 2021). By enabling various methods of communication and sharing, WhatsApp has become a viable tool for acknowledging learners' capabilities in communication skills (Della & Jurberg, 2019) and writing skills (Alouch et al., 2021). However, its potential to enhance employability skills needs empirical research.

Research shows differences in employability skill sets acquired by male and female learners (Jacob, 2002; Pető & Reizer, 2022). According to Dominic and Fulgence (2019), female learners have heightened social and interpersonal skills, whereas male learners have excellent HOT and management skills. Nevertheless, there has been a lack of comprehensive research on ESP learners' acquisition of skills based on gender differences. In order to bridge the gaps, this study aims to determine the effectiveness of the WhatsApp community of practice (WCoP) in enhancing ESP learners' leadership and higher-order thinking skills, as well as investigate potential gender-specific skill sets. This study offers significant insights at the crossroads of virtual learning, WCoP, and ESP education. An in-depth investigation of these aspects ultimately contributes to the innovation of ESP learning practices through digital tools.

Literature Review

Community of Practice via WhatsApp

Several scholars have investigated the use of WhatsApp for developing English language skills, such as writing (Alouch et al., 2021; Hamad, 2017), reading (Khan, 2016), and vocabulary (Bensalem, 2018). They have explored the potential of WhatsApp to motivate learners to participate in learning activities (Khan, 2016). In addition, experts have recognized its role in enhancing a sense of belonging within a CoP (Della & Jurberg, 2019). However, there is a notable gap in the literature concerning the impact of WCoP on employability skills among learners, especially in the context of ESP. This gap suggests a need for further investigation to understand the effectiveness of WCoP in developing ESP learners' employability skills, particularly leadership and higher-order thinking skills.

CoP, rooted in the situated learning theory, emphasizes that participants acquire knowledge and employability skills through authentic activities within specific contexts via interaction and collaboration (Jing, 2017; Wenger & Lave, 1998). It is also influenced by experiential learning theory and connectivism, where learners gain knowledge through hands-on activities and reflection in virtual environments (Bates, 2014). According to Downes (2010), the Internet's accessibility has created a connected community where knowledge acquisition and sharing are readily available to everyone at any time.

Previous studies reveal that ongoing discussion focused on specific subjects, with the aim to achieve a desired goal either through asynchronous or synchronous learning, can improve language skills, such as vocabulary and writing, as well as employability skills like self-regulation, teamwork and HOT skills (Ekici, 2017; Fisher et al., 2014). Scholars also have indicated that CoP in social media develops knowledge management (Al-ghamdi & Al-ghamdi, 2015; Ekici, 2017; Li et al., 2009; Trust, 2015), collaboration (Li et al., 2009; Della & Jurberg, 2019), sense of belonging (Ekici, 2017; Li et al., 2009; Della & Jurberg, 2019), motivation (Ekici, 2017), and the ease of using social media platform (Dogoriti & Pange, 2014). Cronjé and Izak (2022) highlight the value of CoP via WhatsApp tool as it facilitates information sharing, feedback provision, and interaction among individuals with shared interests, promoting the development of autonomy skills. The researchers reiterate that using WhatsApp in education builds an influential learning community by allowing continuous discussions. Della and Jurberg (2019) also shared a similar view that WhatsApp successfully built CoP by bringing visually impaired learners to communicate and share ideas, which eventually created a sense of belonging among learners.

Those researchers shared the ability of WhatsApp as a platform for a CoP and its influence on learners' English language skills. However, they did not highlight its impacts on learners' employability skills. Therefore, the current study addresses the gap in the literature by investigating the effectiveness of WCoP in enhancing ESP learners' HOT and leadership skills. The components essential to forming WCoP, namely knowledge management, regular interaction, ease of using technology, and a sense of belonging, were derived from the literature review. In this study, the researchers investigate the impact of these elements on the development of leadership and HOT skills among ESP learners within the WCoP.

Leadership and Higher-order Thinking Skills

The development of ESP learners' employability skills, particularly HOT and leadership skills through the WCoP, is the central focus of this study. Leadership skills are crucial skills that are sought by many industries. Zimmerman-Oster and Burkhardt (1999) define leadership skills as the ability to understand, set clear goals, examine ethics, have a willingness to take risks, and develop responsibility. The literature shows that CoP plays a vital role in producing leaders from the community (Bourhis et al., 2005; Chrisentary & Barett, 2015). Bourhis et al. (2005) suggest that community leaders should provide clear guidance, facilitate communication, address members' perspectives, and sustain and develop the community. A study by Della and Jurberg (2019) showed that CoP in WhatsApp helps learners take on a leader's role by making the first effort to communicate and encourage others in the community to share their ideas.

According to Chrisentary and Barett (2015), elements such as empowerment, communication, trust, motivation, integrity, and connection with members play essential roles in developing leadership skills in the CoP. Chrisentary and Barett (2015) also explain that CoP in the virtual environment poses several challenges in shaping leadership skills, such as managing the community, communicating, giving motivation, and collaborating with the members. Channing (2020) suggests that experiential learning, regular communication, and attending workshops and classes will boost leadership skills among learners in the community.

On the other hand, HOT skill is commonly linked with Bloom's taxonomy, which includes synthesis, analysis, application, evaluation, and creation (Ho & To, 2022; Watson, 2019). According to Ciardiello (2000), HOT skills allow learners to think critically, innovate ideas, and develop creative knowledge. Creativity and criticality are the primary components of this skill, and they aid in problem-solving and decision-making (Ho & To, 2022; Wechsler et al., 2018). Creativity and criticality are indivisible and require high cognitive processing (Ciardiello, 2000). Doyle (2020) identifies HOT as an essential skill highly valued in today's job market. He explains that employers seek employees who can think beyond the norm, reason logically, generate novel ideas, and make sensible judgments (Doyle, 2020).

In today's contemporary world, fresh graduates are expected to acquire employability skills such as leadership and HOT skills that foster deep thinking and knowledge application in real-life situations. However, preparing learners with sufficient employability skills has become a crucial challenge among many educators due to a lack of readiness to embed these skills in the pedagogy (Abu Bakar, 2019), preference for the traditional classroom, time constraints (Gunawan, 2049; HIVE, 2023), and lack of understanding and competence on the implementation of soft skills in the curriculum (Gunawan, 2019). Therefore, this study examines how the application of WCoP affects ESP learners' leadership and HOT skills, which are perceived as 21st-century skills in today's workforce (Muftahu, 2022).

Theoretical background and hypotheses development

The literature underlines that using WhatsApp in education contributes significantly to developing language skills among English as a Second Language (ESL) learners (Alouch et al., 2021; Hamad, 2017; Khan, 2016). Research also shows the effectiveness of WhatsApp in enhancing collaboration (Della & Jurberg, 2019), motivation (Khan, 2016), interaction (Della & Jurberg, 2019; Nsabayezu, 2020), and rapport between teachers and learners (Nsabayezu, 2020). According to Mheidly et al. (2021), WhatsApp is a tool commonly used by both educators and students due to its affordability and accessibility.

However, studies on the use of WhatsApp as a CoP platform among learners are still dearth. One significant example that exhibits the potential of WCoP is a study by Della and Jurberg (2019). They identified that online group discussion through the WhatsApp tool among visually impaired learners allowed knowledge sharing and developed collaboration, communication, and a sense of belonging. Cronjé and Izak (2022) investigated the use of WhatsApp as a platform for a CoP among postgraduate students in a research proposal writing course. They found out that most learners favoured using WhatsApp as a medium for CoP because it fosters interactions and knowledge sharing. However, the major challenge faced by the learners was the time it took to form the WhatsApp group (Cronjé & Izak, 2022).

The underlying idea of the CoP is that participants who share the same domain of interest contribute knowledge, experiences, and solutions to problems (Bates, 2014; Wenger et al., 2002). The concept of the CoP in education is more analytical as it is derived from the situated learning theory, and as such, it focuses on exposure to real-life issues and experiences (Wenger et al., 2002). Scholars state that CoP can bring learners together (Fisher et al., 2014; Della & Jurberg, 2019), develop collaboration and interaction (Cronjé & Izak, 2022; Ekici, 2017; Della & Jurberg, 2019), increase academic grades (Andrienko, 2017), and enhance knowledge and skills (Penfold, 2010; Soto & Waigandt, 2017).

In this study, the selection of the CoP is based on its relevance in the ESP course. ESP has three significant characteristics: authentic materials, purpose-related orientation, and self-direction (Dudley-Evans & St. John, 1998; Javid, 2015). Authentic materials refer to altered and fixed materials such as books, charts, forms, and other sources, including the ones from the Internet, that are relevant to the objectives of the ESP course (Javid, 2015). Purpose-related orientation aims to prepare ESP learners to function well in the target situation by developing a simulation of a communicative task (Dudley-Evans & St. John, 1998). In ESP courses, learners are trained through participation in various tasks such as paper presentation, reading skills, note-taking, writing, and listening. Self-direction transforms ESP learners into users (Dudley-Evans & St. John, 1998). Hence, learners will be free to decide when and how to study (Gatehouse, 2001; Dudley-Evans & St. John, 1998). By employing CoP, ESP learners have the autonomy (self-direction) to share relevant information (authentic materials) through a communicative task (purpose-related orientation) to perform well in the target situation (Gatehouse, 2001; Soto & Waigandt, 2017). The main purpose of CoP in the ESP course is to encourage learners to take responsibility for their learning (self-direction) by sharing and constructing knowledge (authentic materials) through ongoing interaction (purpose-related orientation).

Dogoriti and Pange (2014) found that incorporating social media in ESP learning effectively provides access to authentic materials, tasks, and autonomy skills. They studied the effect of Twitter and Edmodo on ESP learners' learning communities and identified that social media that encourages engagement, intrinsic motivation, interaction, and performance are crucial for establishing a virtual learning community among ESP learners.

Andrienko (2017) conducted a study with 60 computer engineering students enrolled in an ESP course within a CoP environment. The findings indicate that using social media in teaching and learning enhances language skills like reading, writing, vocabulary, and translation. However, those studies did not touch on issues related to WCoP and ESP learners' employability skills. The ESP course considers These skills essential (Paltridge & Richard, 2013).

Knowledge management

Knowledge management is crucial in a CoP, involving effective planning and knowledge sharing to generate new ideas or suggestions (Al-ghamdi & Al-ghamdi, 2015). Wenger et al. (2002) emphasize that knowledge is a core unit, shaping the identity of individual members and the community. Scholars advocate that knowledge management in the educational CoP empowers learners to take responsibility for their learning and gives opportunities to exchange innovative ideas, produce meaningful information or concepts, create mutual understanding and collaborative analysis, and synthesize disseminated information (Al-ghamdi & Al-ghamdi, 2014; Nussbaum et al., 2020). According to Nussbaum et al. (2020), comparing and analyzing shared ideas enables learners to respond critically even if the learners learn in a virtual environment. In another study, Baker and Beams (2016) highlight that the contribution of knowledge within the community encourages evaluation, facilitation, and motivation among members, which eventually sustains the community's lifespan. Therefore, the researchers hypothesized:

H_1 = Knowledge management impacts ESP learners' leadership skills significantly.

H_2 = Knowledge management impacts ESP learners' higher-order thinking skills significantly.

Regular interaction

According to Wenger et al. (2002), CoP members range from core to peripheral participants. Peripheral members may not be actively involved in discussions but can still gain valuable knowledge by observing the community's interactions. Wenger et al. (2002) also state that a community's success depends on the effectiveness of its discussions. Probst and Borzillo (2008) highlight that a lack of participation and low interaction among members can result in the community's failure. The literature suggests that regular interaction is the main component of a CoP (Fisher et al., 2014; Wenger et al., 2002). As highlighted by Hajhosseini et al. (2016), frequent interaction motivates learners to share their views, evaluate information, and construct new ideas. Yeh et al. (2012) add that virtual interactions stimulate HOT skills and increase self-confidence. According to Baker and Beams (2016), the active participation of core members in the community cultivates leadership skills, which are vital for the CoP's success. Wenger et al. (2002) suggest that the members' involvement in the community enables them to plan and support through effective communication. Therefore, the researchers

hypothesized:

H_3 = Regular interaction impacts ESP learners' leadership skills significantly.

H_4 = Regular interaction impacts ESP learners' higher-order thinking skills significantly.

Ease of Using Technology

According to Fisher et al. (2014), the emergence of social media eases the growth of CoP by breaking the geographical barrier. Although there has been a lack of comprehensive studies on the influence of social media in developing learners' leadership and HOT skills, the literature shows that the online platform has become the essential channel for communicating new ideas, sharing opinions, facilitating other learners, and creating collaborative interface (Al-ghamdi & Al-ghamdi, 2015). Ekici (2017), who investigated the use of social learning networks (SLN) among pre-service teachers, found that the teachers shared their new ideas and presented their lesson plans with other learners and teachers effortlessly through the SLN. Della and Jurberg (2019) indicate that visually impaired learners perceived WhatsApp as a convenient tool due to its quick accessibility through smartphones. Mheidly et al. (2021) also shared a similar idea that the main reason for using WhatsApp in education is its user-friendly interface. According to Patel (2023), constantly evolving technology in various fields eventually helped people, especially leaders, manage and delegate tasks easily by leveraging the right technological tool. He elaborates that comprehensible technology motivates people to accomplish their tasks, communicate their goals, and work efficiently, even in a remote environment (Patel, 2023). Therefore, the researchers hypothesized:

H_5 = The ease of using technology impacts ESP learners' leadership skills significantly.

H6 = The ease of using technology impacts ESP learners' higher-order thinking skills significantly

Sense of Belonging

A sense of belonging is considered an essential element in CoP (Li et al., 2009). According to Wenger et al. (2002), the sense of belonging to a community increases the interaction between novices and experts, facilitates personal growth, and forms a professional identity. They emphasize that solid relationships and trust are established when members interact and share similar interests and passions. Notably, new knowledge is created within the community, and meaning is developed through comfortable communication and collaboration among members (Della & Jurberg, 2019). However, learners may experience discomfort or stress when participating in a community where teachers are present (Kling & Coutright, 2004). Such a situation occurs when teachers fail to switch their roles from experts to facilitators because students may have a strong sense of anxiety if they are evaluated throughout their participation in the discussion (Kling & Coutright, 2004). Learners' apprehension in a community can lead to less engagement, potentially causing the community to lose its functions if members fail to establish trust among themselves. Li et al. (2009) assert that low levels of trust and mutual understanding would discourage members, especially the novices, from being prominent in the community. This scenario hinders their development of HOT skills and professional growth. According to Wenger (1996), fostering a strong relationship in

the community is the key to applying new knowledge into practice. Wenger and Lave (1991) state that the strong bond within the community enables experts to mentor and coach the novices, supporting the development of their professional identity. Therefore, the researchers hypothesized:

H7 = Sense of belonging impacts ESP learners' leadership skills significantly.

H8 = Sense of belonging impacts ESP learners' HOT skills significantly.

Gender Differences

The literature shows that men and women use different skills in employment. Pető and Reizer (2022) examined 33 800 employees across 12 countries on skills used within an occupation based on their gender differences. They found that female workers use less cognitive, numeracy, and digital skills than male workers in the same occupation. The female employees also used fewer reading and writing skills at the workplace than the male employees (Pető & Reizer, 2022). Two decades ago, Jacob (2002) reported a similar result that women tend to have higher non-cognitive skills and lower cognitive skills. Jacob (2002) further highlighted that about 80% of female students intensively used non-cognitive skills, eventually becoming the main reason for their enrolment in higher education.

Non-cognitive skills such as social, interpersonal, teamwork, perseverance, and decision-making have been underlying needs among today's employers. However, many employers claim the skill gap between fresh graduates and industry has raised concerns about the effectiveness of university programs in preparing undergraduates for the real workforce (Dominic & Fulgence, 2019). Dominic and Fulgence (2019), who studied students' tendency towards developing 21st-century skills based on their gender differences, reported that male students demonstrated higher abilities in numeracy, creativity, critical analysis, and self-management than their female counterparts. Mawanga (2018) found that female workers exhibit less confidence in utilizing digital skills in the workforce despite having good ICT skills during their academic years. Additionally, Korlat (2021) notes that female learners have shown higher engagement in online learning during the pandemic than male learners. Therefore, the researchers hypothesized:

H_{1a} = ESP learners' gender differences affect the relationship between knowledge management and leadership skills significantly.

$H_{1}b$ = ESP learners' gender differences affect the relationship between knowledge management and higher-order thinking skills significantly.

H_{2a} = ESP learners' gender differences affect the relationship between a sense of belonging and leadership skills significantly.

$H_{2}b$ = ESP learners' gender differences affect the relationship between a sense of belonging and higher-order thinking skills significantly.

H_{3a} = ESP learners' gender differences affect the relationship between regular interaction and leadership skills significantly.

$H_{3}b$ = ESP learners' gender differences significantly affect the relationship between regular

interaction and higher-order thinking skills.

H_{4a} = ESP learners' gender differences significantly affect the relationship between ease of using technology and leadership skills.

H4b = ESP learners' gender differences significantly affect the relationship between ease of using technology and higher-order thinking skills.

Conceptual framework

The conceptual framework of this study centered on knowledge management, regular interaction, ease of using technology, and a sense of belonging within the WhatsApp CoP (Al-ghamdi & Al-ghamdi, 2015; Ekici, 2017; Cronjé & Izak, 2022; Dogoriti & Pange, 2014; Della & Jurberg, 2019; Trust, 2015), is designed to examine their influence on ESP learners' leadership and HOT skills. Moreover, this study broadens its focus to investigate gender differences in skill acquisition. Figure 1 shows the conceptual framework of the current study.

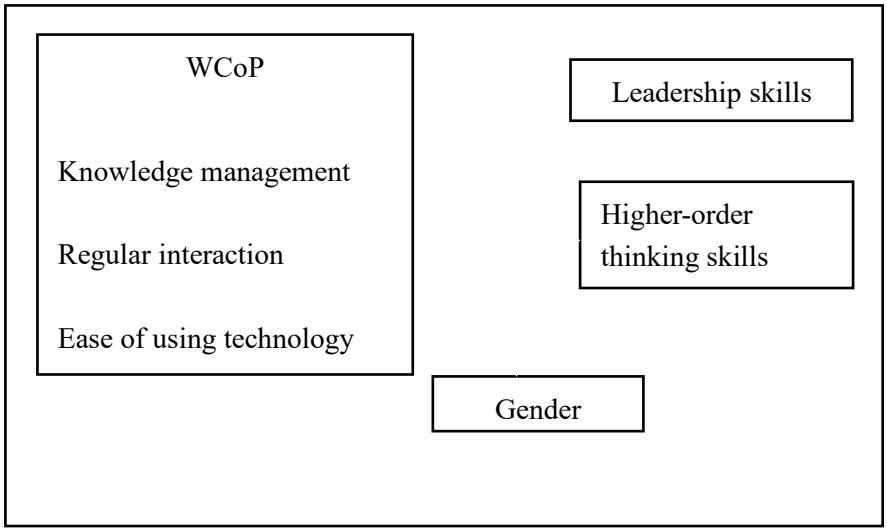

Fig 1. Conceptual framework

Methods

Participants

This study employed a cross-sectional design because it is appropriate for hypothesis testing, as Bhattacherjee (2012) and Neuman (2014) suggested. The current study chose a stratified random sampling based on ESP learners' gender differences to strengthen the internal and external validity of the research. Literature suggests that random sampling has a high potential to prevent bias during the participants' selection and has a more robust capacity to generalize the research results (Bhattacherjee, 2012; Neuman, 2014).

In addition, a diverse sample in this study increased the generalisability of the research findings and external validity. The researchers employed ESP learners taking the Business Communication English course (Academic Semester 2021/2022) at one Malaysian university to participate in the survey. 89 (45.18%) male and 108 (54.82%) female learners completed

the survey. Regarding the participants' age distribution, most fell within the 19-22 age group (67.2%), followed by the 23-26 age group (19.3%). 6.5% belonged to the 27-30 age group, and 7% were above 30. Besides, 44.3% of learners were Malays, 25.4% were Chinese, 10.2% were Indians, 10.1% were foreigners, and 5% were others. In terms of the participants' performance in the English proficiency tests that align with the Common European Framework of Reference (CEFR), 43.3% of learners fell within the upper-intermediate category (B2), 30.5% of learners were at the intermediate level (B1), and 26.2% of learners were advanced (C1).

Learners used WhatsApp as a platform for a CoP to interact with the topics given by their ESP practitioners and share report writing, individual oral presentations, and job interview videos. Learners and practitioners would provide constructive feedback and suggestions to improve one another's performance. WhatsApp was also used to invite questions pertinent to Business Communication English and grammar from the learners. Therefore, learners had the flexibility to answer the questions and share any relevant files for justifications. The demographic data shows that 41.1% of learners spent three to four hours weekly on this WCoP platform. Additionally, 33% of learners spent less than three hours, 12.7% allocated around five to six hours, and 11.2% invested more than six hours.

Data collection and analysis

In this study, a questionnaire was created using a *Google* form. 197 participants, meeting the minimum sample size requirement of 191 suggested by Kerjcie and Morgan (1970) for a 95% confidence level. The questionnaire was categorised into two sections: demographic profile and 35 five-point Likert scale items. The questionnaire items consisted of knowledge management (six items), regular interaction (six items), ease of using technology (five items), and sense of belonging (five items), while the dependent variables comprised leadership (seven items) and HOT (six items) skills.

An informed consent was attached to the questionnaire, and the questionnaire items were validated by two experts in the related field. In order to reduce the inherent risk of bias, participants were assured of their confidentiality and were instructed to answer the questionnaire honestly. Besides, a pilot test was conducted to determine participants' comprehension of the questionnaire, improve the questionnaire items based on the participants' feedback, and get a better understanding of the possible result of the actual research. It is essential to emphasize that the participants of the pilot study were excluded from the actual research.

The research model in this study was developed based on the CoP theoretical foundation, incorporating principles from constructivism, situated learning, experiential learning, and connectivism theories. The theoretical underpinnings, integrated with an extensive review of related literature, have formed key constructs representing essential components for an effective WCoP. Each construct is aligned with a specific learning theory, contributing to the robustness of the framework. For example, 'knowledge management', encompassing knowledge creation and sharing within the community, aligns with constructivism. 'Regular interaction', emphasizing social interactions in the ESP context, derives inspiration from

situated learning theory. 'Ease of using technology', drawn from connectivism, highlights the role of technology in the learning process. Lastly, a 'sense of belonging', integrating with experiential learning principles, underscores the practical experiences of being in the community. The alignment of these constructs with CoP theory and relevant literature establishes a strong framework for investigating the effectiveness of the WCoP in fostering the development of HOT and leadership skills among ESP learners.

The data were screened in terms of normality, missing values, outliers, multicollinearity, and homoscedasticity. The questionnaire items were validated through content and statistical validation. The reliability test was carried out for all seven constructs to measure their internal consistency. The invariance test was performed during confirmatory factor analysis (CFA) to determine the effect of gender on the relationship between WCoP, leadership, and HOT skills. The convergent and discriminant validity were explained through average variance extraction (AVE) and composite reliability (CR).

Results

Preliminary analysis

Preliminary analysis is required before testing the hypotheses to ensure the robustness of the results of this study. The analysis showed that the data set of this study was normally distributed with skewness and kurtosis values ranged from -1 to +1. The multicollinearity of the independent variables was >1 for the tolerance value and <10 for the variance inflation factor (VIF) value (<10), as indicated by Field (2009). No missing values and outliers were detected. Although the study assumes a level of normality in data distribution, it is crucial to highlight that this may not account for all types of data irregularities, which could be a potential limitation of this study. The Cronbach coefficient alpha was used to examine the internal consistency of each item from the questionnaire. Field (2009) explained that a value above 0.70 indicates acceptable reliability. In this study, all variables showed high reliability, with Cronbach's alpha values exceeding 0.80. During the CFA, the factor loadings for each indicator were determined to identify any cross-loadings. According to Hair et al. (2006), factor loadings that exceed a figure of 0.50 are considered significant. In this analysis, all the indicators showed a significant value. The model fit indices of the current study are also at an acceptable level with $\chi^2/df = 1.87$, CFI = 0.95, TLI = 0.94, and RMSEA = 0.06 as Hair et al. (2006) suggested. All the factor loadings are above 0.6, and thus, each item is at a satisfactory level. In addition, each factor loading was scrutinized to ensure that the relationships between observed variables and latent constructs fit the theoretical framework. To enhance the trustworthiness of the research model, the researchers used an iterative process by checking the alignment and coherence between the theoretical framework, model, and observed variables. Modification indices were performed to refine the model fit. Figure 2 shows the model measurement using the CFA.

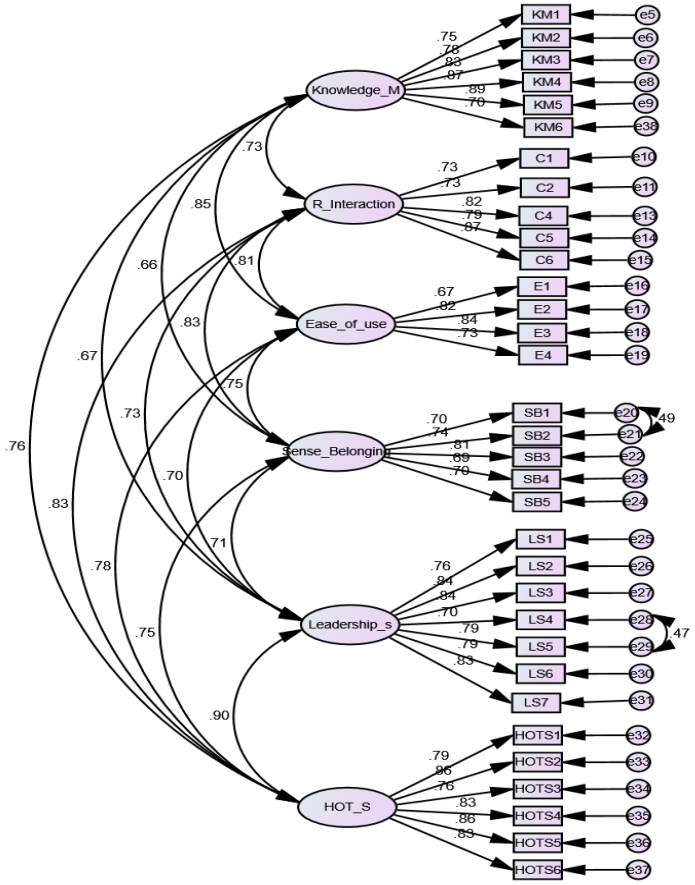

Fig. 2 Measurement model

In the configural invariance test, the unconstrained model appeared to have a good model fit with X^2/df=2.10; GFI=0.86; TLI=0.91; CFI=0.91; RMSEA=0.07. The metric invariance test seemed good because both male and female groups are invariant with a p-value > .05. This means both groups are equivalent across factor structure. The values of CR (>0.70) and AVE (>0.50) showed that knowledge management, regular interaction, ease of use, sense of belonging, leadership skills, and HOT skills achieved convergent validity, as displayed in Table 1. Table 2 shows that the square root of AVE is above the inter-construct correlation. Therefore, the discriminant validity of this study is achieved (Hair et al., 2006).

Table 1

Measurement of convergent validity

Construct	CR	AVE
Leadership skill	0.91	0.67
Knowledge management	0.91	0.71
Regular interaction	0.88	0.71
Ease of use	0.84	0.64
Sense of belonging	0.79	0.56
Higher-order thinking skills	0.91	0.72

Table 2

Measurement of discriminant validity

	LS	KM	RI	EoUT	SB	HOTS
Leadership skills	**0.82**					
Knowledge management	0.62	**0.85**				
Regular interaction	0.71	0.66	**0.84**			
Ease of using technology	0.66	0.71	0.73	**0.80**		
Sense of belonging	0.67	0.59	0.73	0.71	**0.75**	
Higher-order thinking skills	0.80	0.71	0.81	0.74	0.71	**0.85**

Note: LS= Leadership skill, KM= Knowledge management, RI= regular interaction, EoUT= Ease of using technology, SB=sense of belonging, HOTS= Higher-order thinking skill

Structural equation modeling (SEM) analysis

After confirming the collected data's normality, reliability, and validity, the hypotheses were tested using SEM in Amos. Learners' age, fields of study, and proficiency were controlled while running the SEM to increase the results' validity. The structural model in Figure 3 exhibited a good fit ($x^2/df = 2.81$; CFI = .93; TLI=.85; RMSEA=.07).

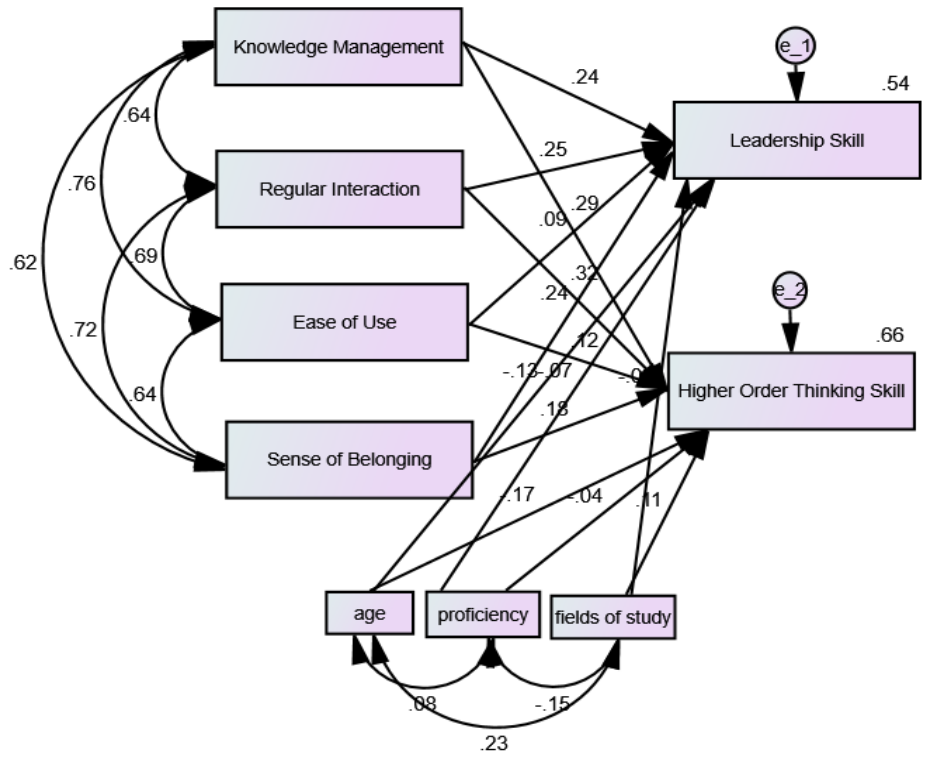

Fig. 3 Path analysis

The above model shows that the application of WCoP is more effective in enhancing ESP learners' HOT skills (r^2= .66) than their leadership skills (r^2=.54). In other words, WCoP influences 66% variance of ESP learners' HOT skills. In comparison, its influence towards leadership skills only explains 54%.

Table 3

Path coefficient

Hypotheses			β	S.E.	C.R.	P	Result
Leadership skills	<---	Knowledge management	.24	.09	3.05	**.00**	Supported
Leadership skills	<---	Regular interaction	.25	.08	3.25	**.00**	Supported
Leadership skills	<---	Ease of use	.09	.10	1.14	.26	Not supported
Leadership skills	<---	Sense of belonging	.24	.08	3.26	**.00**	Supported
HOT skills	<---	Knowledge management	.29	.08	4.36	**.00**	Supported
HOT skills	<---	regular interaction	.32	.070	4.79	**.00**	Supported
HOT skills	<---	Ease of use	.12	.09	1.63	.10	Not supported
HOT skills	<---	Sense of belonging	.18	.07	2.86	**.00**	Supported

Table 3 clearly shows that knowledge management has positive and moderate influence in enhancing ESP learners' leadership skills (β=.24; $p < .05$) and HOT (β=.29; $p < .01$). A similar result is also shown on the influence of regular interaction in the WCoP towards leadership skills (β=.25; $p < .05$) and HOT (β=.32; $p < .01$). Therefore, hypotheses H_1, H_2, H_3, and H_4 are supported. The data in Table 4 shows that WCoP, which promotes self-learning skills, up-to-date information, and collaboration with other learners through social media, has helped increase learners' leadership and HOT skills.

Table 3 shows a positive association between ESP learners' sense of belonging in the WCoP and their leadership and HOT skills with β=.24; $p < .05$ and β=.18; $p < .05$, respectively. Therefore, hypotheses H7 and H8 are supported. Table 4 shows that ESP learners' enjoyment of being with their team members and the comfort of interacting with them through WCoP increased their leadership and HOT skills.

The impact of ease of using technology on ESP learners' leadership (β=.09; $p > .05$) and HOT skills (β=.12; $p > .05$) seemed to have a non-significant value. This shows that learners' use of WhatsApp effortlessly does not impact their leadership and HOT skills. Therefore, hypotheses H5 and H6 are rejected. Although the hypotheses are rejected, the coefficient value for the ability to utilize the features of WhatsApp (β=.174; $p < .05$) and the ease of learning process via this platform (β=.122; $p < .05$) show a positive correlation with ESP learners' leadership skills. However, they appeared to have a non-significant relationship ($p > .05$) with learners' HOT skills, as shown in Table 4.

Table 4

The standardized beta coefficient of construct items towards leadership and hot skills

			Item	B	P value
LS	<---	KM1	I can share knowledge through the use of WhatsApp.	.06	.27
HOTS	<---	KM1		.11	.06
LS	<---	KM2	I can access information through WhatsApp.	.08	.16
HOTS	<---	KM2		.19	**.00**
LS	<---	KM3	I can follow the discussion on WhatsApp.	.05	.32
HOTS	<---	KM3		.15	**.01**
LS	<---	KM4	I can update information through WhatsApp.	.18	**.00**
HOTS	<---	KM4		.26	**.00**
LS	<---	KM5	I can organize knowledge through WhatsApp.	.04	.43
HOTS	<---	KM5		.11	**.05**
LS	<---	KM6	I can gain more responsibilities while learning through WhatsApp.	.47	**.00**
HOTS	<---	KM6		.31	**.00**
LS	<---	RI1	I can interact with my educators effectively through WhatsApp.	.01	.85
HOTS	<---	RI1		.15	**.01**
LS	<---	RI2	I can understand the shared information on WhatsApp.	.17	**.01**
HOTS	<---	RI2		.21	**.00**
LS	<---	RI4	I can discuss effectively through WhatsApp.	.26	**.00**
HOTS	<---	RI4		.31	**.00**
LS	<---	RI5	I can collaborate with my team members through WhatsApp.	.31	**.00**
HOTS	<---	RI5		.15	**.01**
LS	<---	RI6	I can interact with peers effectively through WhatsApp.	.20	**.00**
HOTS	<---	RI6		.35	**.00**
LS	<---	E1	My interaction through WhatsApp is clear and understandable with my classmates and teachers.	.03	.56
HOTS	<---	E1		.01	.76
LS	<---	E2	I can easily use and explore the features of WhatsApp (e.g., upload and download files, share websites, and post comments) for effective learning.	.17	**.00**
HOTS	<---	E2		.08	.17
LS	<---	E3	WhatsApp eases my learning process.	.08	.14
HOTS	<---	E3		.12	**.04**
LS	<---	E4	It is easy for me to become skillful at using WhatsApp.	-.00	.94
HOTS	<---	E4		.10	06
LS	<---	SB1	I enjoy being in the WhatsApp community.	.34	**.00**
HOTS	<---	SB1		.36	**.00**
LS	<---	SB2	I am motivated to share ideas in the WhatsApp community.	.10	.13
HOTS	<---	SB2		.10	.12
LS	<---	SB3	I am satisfied working with my peers through the WhatsApp community.	.16	**.01**
HOTS	<---	SB3		.14	**.03**
LS	<---	SB4	I can express my personal views freely through the WhatsApp community.	.14	**.03**
HOTS	<---	SB4		.23	**.00**
LS	<---	SB5	I feel comfortable interacting with my peers through the WhatsApp community.	.22	**.00**
HOTS	<---	SB5		.19	**.00**

SEM multigroup analysis

A multigroup analysis was performed to determine if male and female ESP learners acquire different sets of leadership and HOT skills through WCoP. 89 (45.18%) male and 108 (54.82%) female learners completed the questionnaire.

Table 5

Standardized regression weights of male and female learners in acquiring leadership and HOT skills

			Male		Female	
			β	P	B	P
Leadership	<---	Knowledge management	**.26**	**.00**	**.22**	**.05**
Leadership	<---	Regular interaction	**.37**	**.00**	**.24**	**.03**
Leadership	<---	Ease of use	.02	.86	.10	.40
Leadership	<---	Sense of belonging	**.32**	**.00**	.20	.06
HOT skill	<---	Knowledge management	**.24**	**.00**	**.37**	**.00**
HOT skill	<---	Regular interaction	**.52**	**.00**	**.19**	**.04**
HOT skill	<---	Ease of use	.03	.73	.09	.34
HOT skill	<---	Sense of belonging	**.18**	**.03**	**.22**	**.01**

Table 5 shows that regular interaction has the strongest predictive power in enhancing male learners' leadership (β= .37; p< .01) and HOT skills (β = .52; p <.01) than the female counterparts. Similarly, knowledge management plays an essential role in developing male learners' leadership skills (β= .26; p< .05) than female learners (β= .22; p< .05). However, in terms of HOT skills, knowledge management has a stronger predictive power towards female learners (β= .37; p< .01) than male learners (β= .24; p< .05). It is also crucial to highlight that the ease of using WhatsApp does not play a significant role in influencing male and female learners' leadership and HOT skills. Therefore, hypotheses H_{1a}, H_1b, H_{2a}, H_2b, H_{3a}, and H_3b are supported while H_1c and H_2c are rejected.

Discussion

The findings of this study reveal that WCoP components such as knowledge management, regular interaction, and sense of belonging play a significant role in enhancing learners' leadership and HOT skills, with regular interaction as the strongest predictive power (Table 3). The researchers advocate Wenger et al.'s (2002) notion that core members in a community are considered community leaders because they have the capabilities to identify issues, take responsibility, make decisions confidently, and monitor and convene the members in the community. Likewise, the study's results reveal that learners who discuss regularly and collaborate effectively with peers improve their leadership skills with coefficient values .26 and .31, respectively, which show a positive and moderate relationship with leadership skills (Table 4). The findings also indicate that frequent communication with educators (β=.15) and comprehension of the shared information (β=.21) have a more substantial impact on learners' HOT skills compared to their leadership skills (Table 4).

Wenger et al. (2002) emphasise that even if some community members are not active participants, they can still gain valuable insights as peripheral members. These individuals gain information and gather ideas by observing active members' communication. In this study, it is identified that learners who access information and follow discussions tend to develop learners' HOT skills rather than leadership skills. This suggests that knowledge management has a stronger relationship with learners' HOT skills than leadership skills. However, Fisher et al. (2014) indicate that peripheral learners have the opportunity to progress gradually as active and core members when they feel confident enough to share ideas based on the collected information. Hence, this study demonstrates that WCoP offers a platform for ESP learners to develop leadership and HOT skills.

The findings also reveal that the ease of using WhatsApp does not significantly impact the development of learners' leadership and HOT skills. Although Patel (2023) and Penfold (2010) state that a user-friendly technology platform eases the accomplishment of tasks and interactions between learners, educators, and content, the current study shows that this feature is unable to enhance learners' leadership and HOT skills. The researchers highlight that the effectiveness of CoP does not rely on the advancement or user-friendliness of social media. Instead, the success of acquiring employability skills lies in the active involvement of community members. Members who share knowledge, interact, and take responsibility for their learning process play a vital role in developing their HOT and leadership skills, as portrayed in Table 4.

Regarding a sense of belonging, it is identified that learners' enjoyment of being in a particular group and the comfort of sharing ideas play a significant role in determining learners' leadership and HOT skills (Table 4). The result aligns with Wenger et al.'s (2002) notion that the success of CoP is dependent on mutual understanding among team members. Team members are more likely to share knowledge and generate new ideas when they feel a sense of belonging, which eventually lengthens the span of WCoP. The researchers concur with Akcaoglu and Lee (2016) that positive group experiences encourage learners to develop innovative ideas and autonomy skills.

WCoP also enhances male and female learners' leadership and HOT skills. The study's results clearly indicate that knowledge management, regular interaction, and a sense of belonging contribute to the development of leadership skills in male learners more than in female learners. In contrast, knowledge management and a sense of belonging have a stronger impact on HOT skills for female learners than their male counterparts. Additionally, regular interactions have a greater influence on the development of HOT skills in male learners than in female learners. Overall, the influence of WCoP on leadership skills is more remarkable among male ESP learners, while its impact on HOT skills is more pronounced among female ESP learners.

In short, the findings show that leadership and HOT skills are developed through influential WCoP. The two essential skills were not taught separately, but they were developed by incorporating an appropriate pedagogical approach in the ESP course. Knowledge management, regular interactions, and a sense of belonging are underlying components in enhancing learners' employability skills. In other words, WCoP gives authentic exposure to

practice leadership and HOT skills. However, male and female learners acquire these skills to varying degrees through WCoP.

Conclusion

In conclusion, WCoP is a vital contributor to enhancing ESP learners' leadership and HOT skills, which explains 54% and 66%, respectively (Figure 3). This study makes a vast contribution to education, especially in providing quality education for ESP learners.

The present study reveals that knowledge management, regular interaction, and a sense of belonging are crucial pillars in developing learners' leadership and HOT skills. Since the demand for fresh graduates with high employability skills is increasing from various sectors, academic institutions need to embed CoP in the ESP curriculum. Scholars have highlighted that one of the core objectives of an ESP course is preparing learners for the future workforce (Paltridge & Richard, 2013). Hence, it is necessary for ESP practitioners to create CoP in a virtual environment as a medium to enhance learners' 21st-century skills. ESP practitioners should allow frequent interactions among ESP learners to boost their leadership and HOT skills. Active participation is the lifeline of CoP. Therefore, ESP practitioners and active learners should encourage the peripheral learners to interact, share knowledge, and give new ideas for an effective community. Regular communication eventually brings all learners in the community closer together. The results show that the sense of belonging significantly impacts on learners' leadership and HOT skills.

This study gives a new insight into the benefits of WCoP in the ESP classroom. Although the literature suggests that choosing an appropriate technology is required for effective interaction and collaboration in the community (Ekici, 2017; Penfold, 2010), this study provides a unique notion that it is not the technology that contributes to the development of learners' employability skills, but it is the initiative taken by the learners to make a successful community.

Another important highlight of this study is that male and female learners have different social skills and self-efficacy abilities that affect their development in employability skills. The findings suggest that male learners develop leadership skills while female learners enhance HOT skills through the WCoP. The awareness of gender differences in acquiring the two essential skills is necessary to break gender stereotypes. Therefore, educators, policymakers, and curriculum designers should develop a strategic pedagogy that gives ESP learners more opportunities for knowledge sharing, planning, independent learning, making decisions, creativity, and criticality to create a balance between male and female learners in acquiring essential skills.

One practical guidance that can be initiated is changing educators' mindsets. ESP practitioners should see the learners as experts trying to improve their skills and expertise rather than perceiving them as beginners. The role of ESP practitioners should not be limited to an educator alone but more so as active members collaborating and interacting with other learners in the WCoP. ESP practitioners should also track the frequency of learners' participation in the WCoP and make adjustments accordingly to create an equitable learning

environment.

Another significant strategy is peer evaluation and mentoring. ESP practitioners should encourage learners to give constructive feedback to other learners by providing an evaluation form rather than allowing them to give general comments. Educators should also supply competent learners with detailed instructions on the ways to mentor other learners. Besides, motivating learners to work together regardless of gender differences will showcase that the acquisition of leadership and HOT skills is not limited by gender.

Since the present study focuses on a group of ESP learners from the Business Communication English course, it is recommended that further research will envelop ESP learners from various fields such as tourism, medicine, technical, and so on. This study employed a quantitative research method, and therefore, future studies should focus on mixed-method research to obtain a robust result. Finally, future studies should test interventions to ensure all learners receive equal opportunities to develop employability skills regardless of culture and gender differences.

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