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KNOWLEDGE SHARING OF STUDENTS' GROUPS DURING COLLECTIVE INFORMATION SEEKING IN RURAL'S VOCATIONAL TRAINING INSTITUTIONS (VTI)

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Abstract:
This study aims to investigate knowledge sharing to students' groups during collective information seeking (CIS) in vocational educational training (VET) institutions in rural library settings. Specifically, the study seeks to assess knowledge shared to students' groups for addressing the problems in rural libraries at VET institutions, determine how students' groups engaged in collective knowledge sharing during collective information seeking in VET institutions in rural library settings, and determine the challenges encountered by VET students' groups in knowledge sharing during CIS. Karunakaran, Spence, and Reddy's (2013) model was used to conduct this study. The population of the study comprised selected VET students in Tanzania's rural settings. A purposive sampling technique was used to select the study participants. This study used convenience sampling to select VET students for inclusion in focus group discussions and interviews. The study recruited 72 participants from second year in VET institutions in Tanzania's rural areas: 18 VET students for interview, 18 VET students for observation and 36 VET students for focus group discussion (FGD). The participants were between 21 and 30 years old. Ten (10) VET students (56%) were male, and eight (8) VET students (44%) were female during the interview and focus group discussion. The data for the study was collected through the use of observation, interviews and focus group discussions (FGD). Qualitative data was analysed through thematic analysis. The

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thematic analysis helped to develop different themes relating to the specific objectives of this study. The findings revealed that, VET students' groups applied both tacit and explicit skills required by VET students' groups to accomplish groups' assignments. Moreover, the availability of both tacit and explicit knowledge helps to advance VET library services to meet the collective information requirements of VET students' groups when accomplishing the groups' tasks.

Keywords: knowledge sharing, types of knowledge shared, how students' groups share knowledge, collective information seeking, hypothesised model of knowledge sharing during CIS

1. Introduction

Knowledge sharing is fundamentally changing in this new era of information technology. There is a drastic shift on the way the old or traditionally era when compared to this modern era of knowledge sharing and information communication technology. The challenges associated with information sharing, like incompleteness or insignificance of information and incorrect information, decrease the awareness of information users to share knowledge (Cabaluna and Dequito, 2022). Collective information required by vocational education training (VET) students' groups is required to be comprehended for accomplishing the groups' assignments.

Moreover, any information accessed during information seeking should be adjusted to make any potential user understandable and read to use (Krzesaj, 2019). Internet has become a vital source of knowledge sharing to VET students' groups during the collective information-seeking (CIS) process. Internet is systematically and regularly required as a source of information for information seekers (Cabaluna and Dequito, 2022).

Over the years, the importance of knowledge sharing and collective information use during collective information seeking (CIS) has been established in various studies (Ghadirian, 2014; Cabaluna and Dequito, 2022; Ndumbaro, 2016: Nihuka and Voogt, 2012). For this reason, the results of this study can be beneficial to VET students' groups whose their groups' tasks are practically oriented toward making new products. VET students' groups are required to share knowledge during CIS to innovate new products which are useful to the community.

However, no researchers have come across a study investigating knowledge sharing of VET students' groups during the CIS process. More significantly, no study has been done proposing a useful model for VET students' groups when sharing knowledge during CIS when given group assignments to accomplish. It is for these reasons that the researcher is required to conduct this study.

1.1 Problem Statement

Knowledge sharing among college students is hampered by challenges during the collective information-seeking (CIS) process when given groups' assignments to accomplish. The recent movement of educational policy makers required to encourage students to engage in effective knowledge-building activities has resulted in educational problems that are still emergent and not well-studied (Csikszentmihalyi and Wolfe, 2014; Lai and Campbell, 2018). Information and knowledge are the most competitive assets to students when accomplishing collective assignments. We have known that for many years, we still lack a clear framework when studying information and knowledge as a resource (Hansen and Widen, 2017).

1.2 Aim and Objectives of the Study

The aim of this study is to investigate knowledge shared by students' groups during collective information seeking (CIS) in vocational education institutions in Tanzania's rural areas.

Specifically, the study seeks to:

1) Evaluate knowledge shared to students' groups during collective information seeking (CIS) in vocational educational training (VET) institutions in rural library settings,
2) Examine how knowledge is shared to students' groups to accomplish groups' assignments in rural libraries at vocational educational training (VET) institutions,
3) Assess the challenges of knowledge sharing encountered to VET students' groups during the CIS process, and
4) Propose an appropriate model of knowledge sharing to VET students' groups during CIS.

1.3 Research Questions

1) What knowledge is shared with students' groups for engaging in collective information seeking (CIS) in vocational educational training (VET) institutions in rural library settings?
2) How is knowledge shared with students' groups to accomplish groups' assignments in rural libraries at vocational educational training (VET) institutions?
3) What challenges are associated with IL skills to VET students' groups during the CIS process?
4) What is an appropriate knowledge-sharing model that can be recommended to VET students' groups during CIS?

1.4 Theoretical Underpinning

1.4.1 Karunakaran, Spence, and Reddy's (2013) model

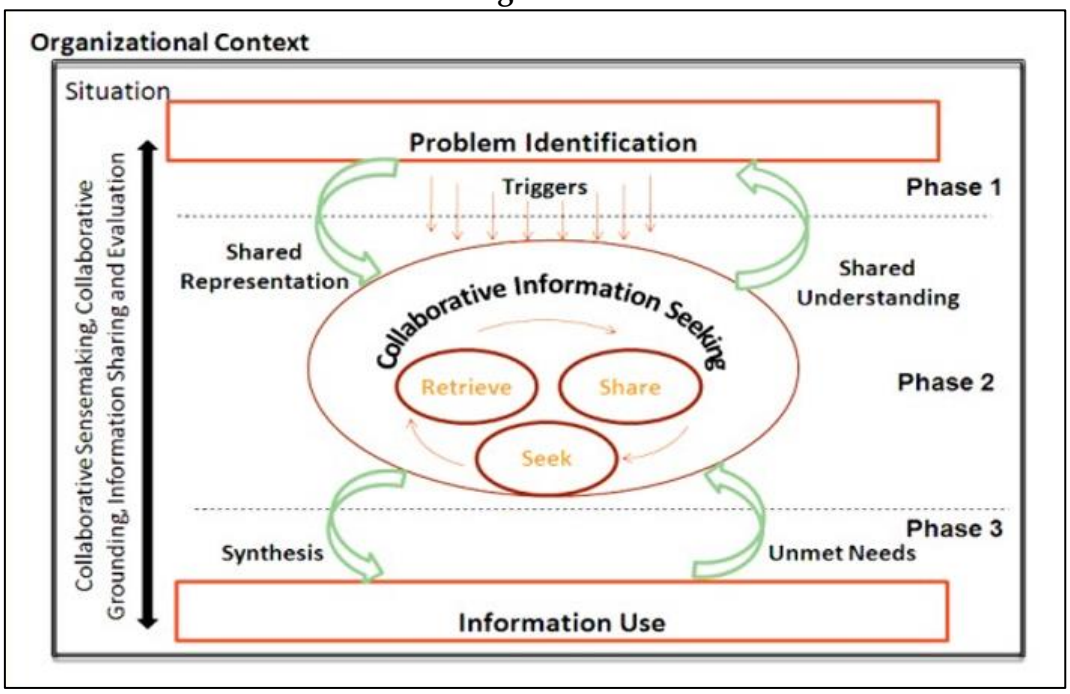
Karunakaran, Spence, and Reddy's (2013) model has three phases of group-based information activities: Problem identification; three micro levels comprising seeking,

retrieving and sharing; and information use that allows the information generated in the first two stages that were collectively compared and evaluated for a common understanding and usage to materialise.

The first phase of Collective information-seeking behaviour (CISB) entails problem identification, which allows information seekers to identify their collective information requirements based on their common understanding. In an institution, people usually solve problems or meet information requirements and produce a shared representation of the problem to solve them via collective communication. A shift from individualised information-seeking activities to CISB was induced by a lack of domain capability, complexity of the information requirements, and fragmented information resources due to a lack of readily accessible information. In the second stage of activity, people's collective information-seeking behaviour helped to solve complex problems and achieve the shared goal. Their model was based on the premise that CIS comprised three micro levels: Seeking, retrieving and sharing information. In the final stage, the information obtained in the first two phases was also collectively compared and evaluated to develop a common understanding and use.

This study applied this model primarily because it delineates the challenges information users face during the collective information-seeking process (as in stage three, which indicates unmet information requirements of users group), which fails VET students' groups to share knowledge for their groups' tasks given. This study was guided by Karunakaran, Spence, and Reddy's (2013) model because the model reveals aspects of collective information seeking and challenges faced by information seekers when seeking, retrieving, and sharing information collectively. Despite many models of collective information-seeking behaviour, Karunakaran, Spence, and Reddy's (2013) model emerged as the prime model of choice and has been widely used. Also, the model of Karunakaran, Spence, and Reddy (2013) has been applied since it related to the aims of this study, which needed to probe the knowledge sharing of information seekers and the challenges information seekers face during collective information seeking. This study was guided by Karunakaran, Spence, and Reddy's (2013) model, as Figure 1.1 below illustrates:

Figure 1.1



Source: Karunakaran, Spence, and Reddy, 2013.

2. Methodology

2.1 Research Design

This study employed descriptive approaches. Qualitative research serves to develop a rich and detailed understanding of certain theories, concepts, and constructs. This method also provided all-inclusive and complete views of knowledge sharing during the CIS process and increased the validity of the research results using descriptive data and methodological triangulation. More specifically, qualitative methodologies allow researchers to observe explanations for a phenomenon so that they can assign in-depth meanings to their findings that are not possible through the aggregated quantitative results (Kouamé and Langley, 2018).

VET students' groups were given groups' assignments to accomplish. The participants worked on two tasks in a computer lab in the library settings for knowledge sharing during CIS process. A review of the methodology used in CIS studies showed that, computer lab settings were the most common method of data collection during collective information seeking (Hertzum and Hansen, 2019).

2.2 Settings

Each pair of participants in VET institutions did their session separately at their convenient time in a computer lab located in VET library premises. The computer labs were located in VET rural library premises. Sessions took between one to two hours. The variables in the study included types of knowledge accessed during CIS and challenges encountered in accessing knowledge during CIS.

2.3 Population and Sample

The study recruited 72 participants from second year in VET institutions in Tanzania's rural areas: 18 VET students for interview, 18 VET students for observation and 36 VET students for focus group discussion (FGD). The participants were between 21 and 30 years old. Ten (10) VET students (56%) were male, and eight (8) VET students (44%) were female during the interview and focus group discussion. The participants were randomly chosen from those who expressed their interest to reach 72 participants. The VET interview participants of three (3) pairs in each VET institution who signed up were given the group's task to accomplish. They are required to be familiar with the use of digital libraries. The participants chose the day and time convenient to them for their sessions. Then, they performed two knowledge-sharing tasks during collective information seeking (CIS) on the internet. Purposive sampling was conducted on convenience and purposive samples that were randomly drawn. A convenience sample is one that is drawn from a source that is conveniently accessible to the researcher. In this study, the researcher purposively recommended final-year students from each VET institution because they are more experienced in CIS.

2.4 Research Instruments

This study used the following research instruments for data collection.

2.4.1 Observation Checklist

An observation guide was designed to provide necessary information on what to note during the observation of students' groups based on the objectives of this study. The observation checklist guides the observations (Marwa, 2017) to ensure they are consistent and systematic for each session or round of observation.

2.4.2 Interview Guide

During the interview, an interview guide developed based on the objectives of the study facilitated the conducting of interviews using semi-structured questions. The semi-structured questions were also provided an opportunity to ask supplementary questions whenever explanations were deemed necessary depending on the responses provided.

2.4.3 Focus Group Discussion Guide

Focus group discussion (FGDs) enabled the researcher to investigate how respondents thought, felt or acted regarding CIS during the groups' discussion. The deliberations were conducted with the aid of an FGD guide developed for a specific research question to capture its subject of interest (Seven et al., 2021). The guide helped to ensure the FGDs were not too tentative, haphazard, and disruptive. In this study, the FGD guide was designed and guided by the research objectives.

2.5 Data Collection

The data for the study was collected through the use of observation, interviews and focus group discussions (FGD). Face-to-face interviews present an advantage because physical conversational meetings can enhance the possibility of creating a safe and comfortable atmosphere for the interviewees to express their views (Saarijarvi and Bratt, 2021). In this regard, Basil (2019) contends that FGDs are advantageous because they constitute expressive collecting data means that yield a lot of information in a relatively short time; the method is, in fact, a resource-saving data collection approach appropriate for investigating the reality of life and experiences of the respondents (Seven et al., 2021). Moreover, Observation, as a data collection method, allows the researcher to witness interactions of the study participants as they perform tasks (Marwa, 2017) of interest to the study in accordance with the research objective and research problem.

2.6 Data Analysis

All sorted data was read carefully to obtain the general sense of knowledge sharing and overall meaning in relation to the study's objectives. All data was organised into categories and coded based on the established themes. Participants' views were analysed to obtain their perceptions, understanding, and meaning attached to a subject in context. Nvivo Version 7 Computer software is used to code, sort, categorise, and analyse the data.

2.7 Ethical Consideration

From the outset, the respondents were briefed beforehand about the study in line with established research protocols. The respondents assured that the results were not disclosed to any third party and were used only for academic purposes (i.e., participants were guaranteed the confidentiality of the information they provided). Thereafter, the participants had to sign consent forms after briefings for them to provide informed consent. Moreover, respondents were given information about their right to withdraw their participation in the study.

3. Findings

3.1 Interview Findings

3.1.1 Knowledge Students' Groups Applied in Solving the Collective Assignment

VET respondents were asked what knowledge was acquired to accomplish their groups' assignments. The question of what knowledge was acquired by VET students' groups to accomplish their groups' assignments helped to assess whether tacit or explicit knowledge was applicable during the task. Table 4.8 below presents the results:

Table 1.1: Types of Knowledge Applied to VET Students' Groups

Types of Knowledge	**(N=18)**
	Percentage applied by VET students' Groups (%)
Tacit Knowledge	67%
Explicit Knowledge	78%

Source: Field Data, (2023).

Results in Table 1.1 above indicate that VET's respondents applied more explicit knowledge (78%) compared to tacit knowledge (67%) to accomplish the groups' assignments given.

Table 1.2: Types of Knowledge Applied by VET Students' Groups to Different Courses for Groups' Assignments

Types of Knowledge	**Types of Fields / Courses (N=18)**				
	Civil Engineering	**Domestic Electrical Installation**	**Welding and Metal Fabrication**	**Plumbing and Pipe Fitting**	**Auto-Electrical**
Tacit Knowledge	0 (0%)	7 (38.9%)	0 (0%)	2 (11.1%)	3 (16.7%)
Explicit Knowledge	2 (5.6%)	6 (33%)	2 (11.1%)	2 (11.1%)	3 (16.7%)

Source: Field Data, (2023).

As Table 1.2 above illustrates, VET respondents from different programmes applied either tacit or explicit knowledge to accomplish the groups' assignments in colleges A, B and C of VET in Babati, Kondoa and Lushoto districts. VET respondents from the domestic electrical installation programme in VET institutions in rural areas applied more tacit knowledge (38.9%, n= 7) than explicit knowledge (33%, n= 6). The auto-electrical programme applied explicit knowledge (16.7%, n=3), which was tied with tacit knowledge (16.7%, n=3). Interview findings show that the plumbing and pipes fittings course applied both tacit knowledge (11.1%, n=2) and explicit knowledge (11.1%, n=2) at the same level to accomplish the groups' assignments given. The civil engineering (0%, n=0), welding, and metal fabrication groups (0%, n=0) of VET's respondents did not use tacit knowledge to complete the assigned groups' tasks. Civil engineering courses applied explicit knowledge (5.6%, n=2) and did not apply tacit knowledge (0%, n=0). Moreover, the welding and metal fabrication course applied explicit knowledge (11.1%, n =2) and not tacit knowledge (0%, n=0) to accomplish the groups' assignments.

VET students studying plumbing and pipe fitting in VET institutions A in Babati district were asked about the knowledge students' groups used to address the problems of their group project. One of the respondents revealed that, they got incomplete information from their classmates in class. The researcher also noticed that the students had consulted their subjects' teachers, who taught them different subjects on campus. The other Babati plumbing and pipefitting respondents who participated in the interview acknowledged that they had also used the library to obtain the information required to complete the group's project. Nevertheless, during the interview, a plumbing and pipe fitting respondent revealed that the majority of the knowledge (11.1%) used to complete

the group' assignment came from their fellow group members when they were given a collective task to complete.

3.1.2 Knowledge Sharing Strategies to VET Students' Groups

The objective of how students' groups in rural libraries at VET institutions engaged in knowledge sharing was assessed using face-to-face interviews. A face-to-face interview was conducted with VET's respondents specializing in civil engineering, auto-electrical, welding and metal fabrication, plumbing and pipe fitting, and domestic electrical installation. VET's respondents were asked to describe how they shared knowledge among their group members to complete group assignments. The primary goal was to look into the group' knowledge-sharing practices of VET 'students in rural areas. The results of this objective are shown in Tables 1.3 and 1.4 below:

Table 1.3: Collective Knowledge-Sharing Strategies of Different VET Programmes

Knowledge Sharing Strategies	**Vocational Education Training (VET) Courses (N=18)**				
	Civil Engineering	**Electrical Installation**	**Welding and Metal Fabrication**	**Plumbing and Pipe Fitting**	**Auto-Electrical**
Audio Conferencing	2	2	3	3	3
Blogging	0	0	0	0	0
Google Documents Sharing	0	0	0	0	0
Group Discussion	4	3	4	1	2
Internet Sharing	0	0	1	0	1
Mobile Phones	3	4	3	2	1
Online Forum	0	0	0	0	0
Sending and Receiving E-Mails	4	3	4	3	2
Video Sharing	4	3	2	2	3
WhatsApp Group	4	2	3	3	2

Key: Numbers are the coding references of respondents focusing on a specific theme for this study.
Source: Field Data, (2023).

Table 1.3 above demonstrates the knowledge-sharing strategies applied by VET students' groups in VET institutions A, B and knowledge-sharing strategies showing how knowledge was shared in VET rural libraries in Tanzania. The collective information-sharing strategies applied by VET students' groups in Table 1.3 above show the coding references in numbers that reflected the frequencies of each knowledge-sharing strategy used during the CIS process.

Table 1.4: Knowledge Sharing Strategies to VET Students' Groups during CIS

Knowledge Sharing Strategies	**(N=18)**	
	Frequency	**Percentage (%)**
Audio Conferencing	13	72%
Blogging	0	0%
Google Documents	0	0%
Groups' Discussion	14	78%
Internet Sharing	2	11%
Mobile Phones	13	72%
Online Forum	0	0%
Sending and Receiving E-Mails	16	89%
Video Sharing	14	78%
WhatsApp Group	14	78%

Source: Field Data, (2023).

Table 1.4 above shows that, during in-person interviews, the respondents from VET institutions in all the rural districts of Babati, Kondoa, and Lushoto acknowledged that they shared knowledge via emails (89%, n=16). VET's respondents also exchanged knowledge via video sharing (78%, n=14) as well. Accordingly, VET group members watched professional videos that provided guidance on how to solve complex issues. The respondents also exchanged links that satisfied their group's requirements for information in order to share knowledge online. The interview findings in Table 1.4 above show that, among the VET students' groups, the most common ways to share knowledge were via sending and receiving emails (89%, n=16), video sharing (78, n=14), group discussions (78%, n=14), through WhatsApp groups (78%, n=14) and mobile phones (72%, n=13). Relatively few groups shared knowledge online, with (11%, n=2) doing so. No groups shared knowledge through blogging (0%), Google Docs (0%) or online forums (0%). VET respondents in college B were questioned about how students' groups engaged in sharing knowledge during collective information seeking. The welding and metal fabrication students' group from the VET institution at college B in the Kondoa district attested that they shared knowledge with one another on their cell phones (72%, n=13) during group' works. During an interview regarding how they exchanged knowledge to complete the assignments for their auto-electrical course at College C in Lushoto district, the students' group acknowledged that they communicated practical knowledge during collective information seeking (CIS). The interview findings showed that VET institutions in the districts of Babati, Lushoto, and Kondoa were using various collective knowledge-sharing mechanisms, as illustrated in Table 1.4 above.

3.1.3 Challenges Encountered by Students' Groups During Knowledge Sharing

This study sought to determine barriers faced by vocational education training (VET) students' groups when sharing knowledge during the collective information-seeking (CIS) process in VET institutions. The following is the table summary of interview results

(Table 1.5) represented the challenges encountered by VET students' groups when sharing knowledge during CIS process:

Table 1.5: Frequency distribution with percentages of respondents based on challenges faced

Challenges Faced by VET Students' Groups (N=18)	**Frequency**	**Percentage (%)**
Different levels of experiences during CIS among VET students	2	11.2%
Disagreement on massive retrieved information during CIS	3	16.7%
Low Concentration of VET students during CIS	3	16.7%
Absence of ICT equipment	3	16.7%
Insufficient information on protective gears	8	44.4%
Low skills and Time Lapse during CIS	17	94.5%
Absence of practical information for reference	3	16.7%
No policy or framework that guides VET students during CIS	13	85%
Absence of subjects librarians	11	61.1%
No information for professional materials	11	61.1%
Lack of E- resources	4	22.3%
Complex Language for professional materials	2	11.1%
Unreliable internet during CIS	5	27.8%

Source: Field Data, (2023).

As Table 1.5 above illustrates, VET respondents during interviews from different programmes encountered challenges in knowledge sharing during CIS to accomplish the groups' assignments in colleges A, B and C of VET in Babati, Kondoa and Lushoto districts. VET respondents from VET institutions in rural areas faced one of the major challenges of having low skills and time lapses during CIS (94.5%, n= 17). The other major challenge faced by VET students' groups during knowledge sharing was the absence of a policy or framework that guides VET students on knowledge sharing during CIS (85%, n=13). The absence of subject librarians to assist VET students' groups during CIS (61.1%, n=11) was tied with the absence of information for professional materials (61.1%, n=11). Insufficient information on protective gears (44.4%, n=8) to VET courses, unreliable internet during CIS (27.8%, n=5) and lack of e-resources (22.3%, n=4) were the challenges faced by VET students' groups to accomplish groups' assignments. Also, interview findings show that VET student group members faced both challenges of disagreement on massive retrieved information that could assist in knowledge sharing during CIS, low concentration of VET students during CIS and absence of ICT equipment (16.7%, n=3). Moreover, VET students encountered the challenge of complex language used for professional materials (11.1, n=2)) and different levels of experiences and understanding of how to search for information among VET students (11.1%, n=2).

3.2 Focus Group Discussion Findings

3.2.1 Types of Knowledge Shared to VET Students' Groups

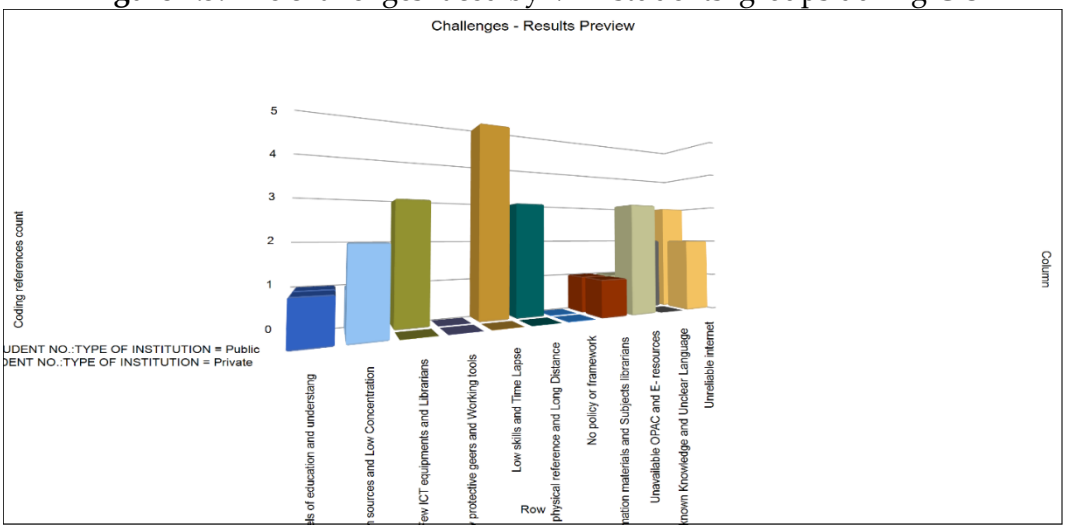
One of the group's members in the auto-electrical course from college C in the Lushoto area was questioned during the focus group discussion (FGD) about the kind of

knowledge they provided in order to complete the group' assignment. The students clarified that they had provided useful knowledge on the issue of an automobile starter that was not operating efficiently. Occasionally, the car's starter may stop working due to problems with other components, such as the field coil or the section known as the "allimacha" part. The student suggested that in order to diagnose every potential component of the automobile starter, all students in their speciality should be obliged to share knowledge. During the focus group discussion (FGD), the students' group summarized the practical knowledge that was presented and suggested that all of the vehicle starter's parts be examined to determine whether the car starter's malfunction was caused by an electrical fault or a failure in the passage of energy. During FGD, one of the group's members of auto-electrical in VET institution of college C said:

> *"Once you see a red light appears to voltmeter, then you realise that part of the car' starter has the problem, it means there is an electrical fault to that part of a car' starter and that specific part with the problem required to be replaced with new spare part" (G – C1).*

Moreover, VET respondents during FGD from VET college C of plumbing and pipe fittings mentioned that they required knowledge on the quality of materials used for groups' assignments.

Figure 1.3: The challenges faced by VET students' groups during CIS



Source: Field Data, (2023).

Figure 1.3 above illustrates FGD results on low skills among VET students and time-lapse, which were the significant challenges faced by VET during CIS. Other major challenges mentioned by VET respondents during FGD were the absence of ICT equipment, lack of information on professional reference materials for groups' works, complex language used for groups' assignments given and unavailability of e-resources to VET courses.

One of the respondents during the interview in VET college B explained that:

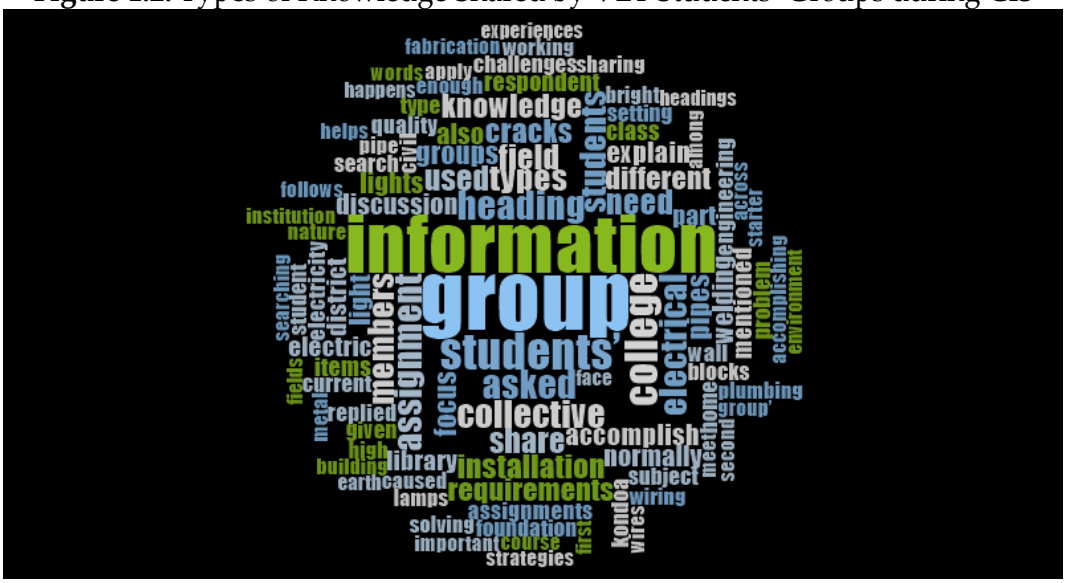
"VET rural students face the challenge of not having VET policy during CIS which directs VET students in case one has ideas or knowledge for creating items which are useful for the whole community. In VET rural institutions, VET students have ideas for creating items which are important for the community but there is no VET policy specific for VET students' items creativity that guides us. This leads VET students to find nowhere to implement our ideas or tacit knowledge for creativity" [VET College B, Student No.1].

3.3 Observation Findings

3.3.1 Types of Knowledge Shared to VET Students' Groups

Types of knowledge required by VET students' groups during the CIS process to complete groups' assignments given (refer to Figure 1.2 below). VET students required information on experiences on how to solve the collective assignments from VET colleges A, B and C. Knowledge on the experience of groups' assignments required to accomplish groups' tasks during collective information seeking (CIS). One of the group members from VET college C of auto-electrical installation was observed providing directives to other group members on the car starter which was not functioning; the group member from the auto-electrical course was given the assignment to fix the problem of a car starter. One of the students illustrated the light signals to other group members that they had provided useful knowledge on the issue of an automobile starter that was not operating.

Figure 1.2: Types of Knowledge Shared by VET Students' Groups during CIS



4. Discussions

4.1 Knowledge Students' Groups Applied in Solving the Collective Assignment

The discussion on knowledge students' groups applied in solving the collective assignments given was based on knowledge sharing in the context of collective information seeking (CIS). The students' groups from VET institutions in rural libraries

were sharing both tacit (67%) and explicit (78%) knowledge to accomplish groups' assignments. Moreover, both explicit knowledge (78%) and tacit knowledge (67%) were applied by VET courses when accomplishing their groups' assignments (see Chapter Four, Table 1.1). Implicitly, when different individuals pool their knowledge, skills, expertise, and experience together to accomplish the assigned group task, positive results in the group tend to result, thanks to such collaborative and collegial efforts.

However, the findings of this study showed that explicit knowledge (78%) was highly applied to accomplish groups' assignments in VET institutions compared to tacit knowledge (67%). This might be the reason that tacit knowledge was not documented in VET rural libraries, as revealed by VET respondents when asked to explain the challenges faced during CIS. Hernaus et al. (2019) confirmed that scholars tend to hide more tacit than explicit knowledge. VET respondents in rural settings must share knowledge to accomplish the groups' assignments during CIS. Far (2019) further contended that, group members normally conducted brief collective information seeking (CIS) to gain more knowledge on the subject matter and shared their views and ideas with other group members. The literature revealed the role of these components (tacit and explicit knowledge) in engaging VET students' groups with continuous collaborative knowledge sharing and exchange of ideas to accomplish group assignments. Alsaad, Atalay and Sarvan (2014) showed different findings that joint knowledge creation provided by e-collaboration between partners was promoted jointly and generated new knowledge; accessed and acquired knowledge from collaborating partners to complement each other's missing knowledge. Universities should encourage knowledge sharing between students by designing course activities and assessments that incorporate file-sharing and information and communication technology (Ahmad, Jameel and Raewf, 2021). Technology is essential to promote knowledge sharing (KS) because it leads to communicate information and allows cooperation between students (Ahmad, Jameel and Raewf, 2021).

4.2 Strategies Applied for Knowledge Sharing to VET Students' Group

Interview findings revealed that the majority of VET students (n=16, 89%) applied e-mails for sharing knowledge through sending and receiving e-mails. VET respondents (n=14, 78%) said that they shared knowledge through video sharing by sharing practical demonstrations of their areas of professionalism. Moreover, VET respondents from VET college C pursuing auto-electronics observed sharing videos on how a car's gearbox functions as interview findings showed that VET respondents shared knowledge through WhatsApp group created (n=14, 78%) by sharing videos.

However, interview findings showed that VET respondents shared knowledge through group discussions (n=14, 78%) by exchanging ideas and experiences among VET group members. Dharahaj (2014) revealed that the relationship between knowledge transfer and performance could hold for both tacit and explicit knowledge. Ghadalirian (2014), who investigated knowledge-sharing behavior among students in the learning environment in Malaysia, found technology support was the main first variable

significantly affecting knowledge application to students when given tasks to accomplish. Ndumbaro (2016) revealed similar findings that, students' information-sharing practices related to the sharing of not only information that was generated in the field but also information and knowledge which was acquired in classes prior to the commencement of the fields.

4.3 Challenges Encountered by VET Students' Groups During Knowledge Sharing

This study was undertaken to probe challenges faced by VET students' groups when sharing knowledge to accomplish groups' tasks in Tanzania's rural libraries. The following are the major challenges faced by VET students' groups in sharing knowledge during CIS when accomplishing groups' tasks:

4.3.1 Unreliable Internet to VET Rural Institutions

Unreliable internet to VET rural institutions (28%, n=5) was one of the major challenges that VET respondents mentioned during interviews conducted in colleges A, B and C. VET respondents from colleges A, B and C admitted that unreliable internet hindered them from sharing knowledge during CIS in VET rural's libraries. These findings concurred with those of Mwinyimbegu (2018), who showed that inadequate bandwidth (67.3%. n=35) among selected public university libraries in Tanzania hindered library users from meeting their information requirements. Similar findings by Liman (2022) showed that (46%, n=39) of respondents reported that poor provision of library services was caused by poor internet services among academic libraries in Gombe State in Nigeria. Similarly, the problem that most of the postgraduate students interviewed indicated facing inadequate bandwidth when they attempted to utilise the Unisa online resources in South Africa when Desta, Preez and Ngulube (2019) investigated the factors influencing the information-seeking behaviour of postgraduate students.

Observation findings by Scholarstica, Nkeiru and Obinna (2018) revealed that internet connectivity was usually shut down during the weekend at Federal University in Kashere, while at Gombe State University, library users found it difficult to access e-resources outside the library building. During the interview, VET respondents mentioned unreliable internet to VET rural institutions had a negative impact on VET students' groups to share knowledge to accomplish the groups' assignments given.

Similar findings to this study by Thindwa, Chawinga and Dube (2019) reported a number of challenges to undergraduate security studies students in Malawi. One of them was poor internet access that affected students' academic activities to accomplish assignments, prepare for their examinations and completing research projects as the internet is becoming a popular source of information in the 21st century. The fact is when VET students' group members are well-informed, they become knowledgeable in their areas of professionalism.

These findings were supported by a study on the information-seeking behaviour of distance learning students at Mzuzu University in Malawi by Chawinga and Zozie (2016), which found that 207 (80.5%) students used the internet as a source of information.

The internet is an important source of information for sharing knowledge, offering formal access to current, quality and relevant information (Asibey, Agyemang and Dankwah, 2017). This study concludes that the internet is important to VET students when searching for information to accomplish practical group assignments.

4.3.2 Low IL Skills among VET Students' Groups' Members

Face-to-face interviews revealed low information literacy (IL) skills (90%, n=17) to VET students groups' members as one of the major challenges to meeting their groups' information requirements for sharing knowledge during CIS. Similarly, findings by Luambano (2016) showed that, undergraduate distance learning students in Tanzania contended with the problems of lacking awareness of online resources and skills for them to search on the web effectively. Reviewed literature found that IL education had remained a non-priority area in many institutions of higher learning (IOHL) and, in many cases, was not even taught as effectively as it should be. The interest in IL acquisition and mastery stems from problems that information users experience when they attempt to navigate the current complex web of information environment pertaining to problem-solving and decision-making processes. In this regard, institutions of higher learning (IOHL) facilitate information literacy acquisition for sharing knowledge during CIS. However, Klomri and Tedre (2021) found the number of postgraduate students at the University of Dar-es-salaam in Tanzania mentioned PDF documents as trustworthy, as one student explained:

> "*First you enter your words and then 'PDF', then you click 'Search', and the information that appears there is trusted.*

Thindwa, Chawinga, and Dube (2019) showed undergraduate security students in Malawi lacked online information literacy skills to accomplish the given assignments and they were overwhelmed by the amount of information available on the internet to share knowledge. VET libraries play an important role in ensuring VET students' groups acquire the necessary IL skills for sharing knowledge during the CIS process to accomplish the groups' assignments given. Mwinyimbegu (2018) summarised as it goes without saying that maximum utilization of Open Educational Resources (OER) depends very much on IL skills, which libraries offer to their users to share knowledge.

4.3.3 Lack of Access to ICTs

Few information communication technology (ICT) equipment (16.7%, n=3) to the VET' rural institutions of college C in the Lushoto district, college A in the Babati district and college B in the Kondoa district was mentioned as the major challenge during a face-to-face interview. The computers were not enough for all students to share knowledge during CIS. Students' groups from colleges A, B and C were forced to access computers in shifts to accomplish their groups' assignments.

Thindwa, Chawinga and Dube (2019) reported similar findings to this study: undergraduate security students in Malawi faced the challenge of a shortage of computer laboratories for academic activities, accomplishing assignments, preparing for their examinations and completing research projects.

4.3.4 Absence of Practical Information for Professional Items

The interviewees from an auto-electrical course in college C in Lushoto district pin-pointed the absence of practical information for professional materials (61%, n=11). Practical information was found vital to sharing knowledge with VET students' groups to accomplish the groups' assignments. For example, the information on the car's gearbox was not available in the library when VET students' groups of auto-electrical course were required to refer during CIS. One of the VET respondents pursuing an auto-electrical course at college C in the Lushoto district, during an interview, declared that knowledge retrieved from the library was mainly theory. Another respondent in college C stated that, as a result, group members are compelled to go to the garage in the streets outside the library to acquire practical information. This helped VET students to learn parts of the gearbox and how it functions.

4.3.5 Lack of Information on Protective Gears

Information on protective gears was observed to be not comprehensive for the courses of welding and metal fabrication, domestic electrical installation and auto-electrical. This was evident from the findings (44%, n=8) revealed by VET students during the interview, mentioned the challenge of information on protective gears was not comprehensive that faced by all VET respondents who were interviewed from domestic electrical installation, auto electrical, and welding and metal fabrication courses. Information on protective gears was cited as inadequate from interviewees of domestic electrical installation, welding and metal fabrication, and auto-electrical courses that hindered VET students' groups from sharing knowledge. Insufficient information on protective gear led some VET respondents to observe not using protective gear when doing their group assignments.

4.3.6 Absence of Policy or Framework to Guide VET' Students' Groups during CIS

The findings revealed that there was no policy or framework that guided VET students' groups during collective information seeking (CIS) in Lushoto, Babati and Kondoa districts. This seemed difficult in case the VET group wanted to innovate new items or come up with new ideas for sharing knowledge as the source of creation for new items during CIS.

Nonetheless, Mwinyimbegu (2018) stated that (69.2%, n=36) of the respondents said the lack of policies and guidelines in public universities in Tanzania to guide the use of Open Educational Resources (OER) was a major challenge and should be taken into consideration. Samzugi (2017) revealed that policy is important and theoretically guides the best practices.

4.3.7 Disagreement on Selection of Appropriate Retrieved Information on the Internet

There was a massive amount of information retrieved on the internet during CIS when VET students' groups were given collective assignments to accomplish from colleges A, B and C. The observation findings showed that, VET students groups' members of colleges A, B and C failed to evaluate massive amounts of retrieved information. This hindered the sharing of knowledge to VET students' groups. The disagreements on which information was suitable for their queries were the main challenge to VET respondents in selecting appropriate information when sharing knowledge. The disagreements as to which information was appropriate to respond to the query led the VET group's members to call the librarian for clarification. Observation findings with Cheng and Tsai (2017) revealed that specialized training for preparing novice researchers in Taiwan is critically required to evaluate relevant information or scholarly work to fulfil their research purposes for sharing knowledge. Similar findings from Ma (2017) showed that students in the study demonstrated insufficient information literacy (IL) skills in specific contexts of seeking and using information to meet the users' information requirements on the internet.

Furthermore, Mason (2019) showed that, undergraduate students in California developed limited topics but sometimes ended up with too much information and, thereafter, failed to evaluate the retrieved information for sharing knowledge according to their information requirements due to information overload (Mwantimwa, Mwambungulu and Kassim, 2021). This was the reason for VET respondents' disagreement on the selection of appropriate retrieved information on the internet that facilitates knowledge sharing.

4.3.8 Absence of Subjects' Librarians to Assist VET' Students' Groups during CIS

The interview findings revealed that the respondents from VET students' groups mentioned the absence of subjects' librarians (61%, n=11) during CIS was among the hindrances to sharing knowledge (see Table 1.5). The VET respondents who were interviewed explained that subjects' librarians could better understand their knowledge-sharing requirements, which responded to their groups' assignments. The researcher observed students' group of the plumbing and pipes fitting course in college A in Babati district, requesting the subject teacher to go to the library to give VET respondents more clarification of the searching query. VET's respondents failed to understand the information requirements of the query given for sharing knowledge as the group' assignment. Thereafter, the VET students' group proceeded with the information search after they got more clarification from librarians on the group's assignment given during CIS.

Moreover, Fena (2020) showed that choral directors in New York required librarians and other information professionals to help the group (choral directors) use the required information to discover new repertoire, plan concert programs, improve rehearsals and support other relevant activities.

4.3.9 Unavailability of E-resources

The FGD findings from VET colleges B and C revealed no electronic reference information materials for VET courses when VET students' groups were given group assignments to accomplish. FGDs showed that VET respondents failed to accomplish the given groups' assignments on time due to the unavailability of required electronic information resources. Different electronic information sources were compulsory for sharing knowledge with VET students' groups when accomplishing their collective assignments.

Saumure et al. (2012) summarised that, electronic information resources were key for sharing knowledge to the students' information-seeking successes.

4.3.10 Differences Experiences among VET Respondents

During FGD in college C, VET respondents pinpointed that differences in experiences amongst respondents led to different understandings of information retrieved. Other VET students during FGD in college A directly admitted that VET students were admitted with ordinary level qualifications while others were admitted to VET rural institutions with standard seven qualifications. FGD findings in colleges B and C revealed that differences in experiences among VET students led to a time-lapse in teaching their fellow colleagues during CIS.

4.3.11 Lack of Documented Tacit Knowledge in VET's Rural Libraries

Lack of documented tacit knowledge in VET' rural libraries settings was noted during FGD. The VET respondents relied more on explicit knowledge (78%) to accomplish the groups' assignments given because the tacit knowledge was not found in the library settings. VET respondents required tacit knowledge (67%) to solve the problem associated with the groups' tasks given. Although there was a high level of usage of explicit knowledge (78%) in various VET library settings than the usage of tacit knowledge (67%) that was still low. Low usage of tacit knowledge was caused by the challenge of lack of documented tacit knowledge in VET rural libraries. VET respondents are required to share knowledge to accomplish the group's assignments. Knowledge sharing refers to the exchange of explicit or tacit knowledge, ideas, experiences or skills from one individual to another individual student or group of students (Chen, Tan, and Pi, 2021).

However, Desta, Preez and Ngulube (2017) revealed a related challenge to this study: the library information collection at the University of South Africa did not meet the information requirements of postgraduate students; the collection did not seem to cover all subject areas. There was a need to extend the VET library's collection to include these resources.

4.3.12 Unreliability of Electricity

During the FGDs, VET students mentioned that power cuts and unreliability of the electricity supply hindered knowledge sharing during CIS. Similar findings from Nihuka

and Voogt (2012) noted that power cuts and unreliability in the electricity supply and narrow bandwidth were experienced as a challenge by all instructors when investigating collaborative e-learning at the Open University of Tanzania. Nihuka and Voogt (2012) showed that the unreliability of electricity hampered the writing of courses, the uploading of courses and resources into Moodle and handling e-mails. When there was a power cut, users had to wait until there was electricity and an improved internet signal (Nihuka and Voogt, 2012).

5. Conclusion

The rapid growth of online learning is essential to understanding how students in the online collective learning environments can share their knowledge in order to achieve their academic success during the collective information-seeking process (CIS). Knowledge was one of the vital aspects during CIS required by VET respondents in solving the groups' assignments given. Knowledge must also be extracted from the enactment of the vision to inform its replenishment to solve the existing problem (Grove *et al*, 2017). Moreover, VET students' groups in VET rural institutions required both tacit knowledge (67%) and explicit knowledge (78%) to accomplish groups' assignments.

The interview findings show that, among the VET students' groups, the most common ways to share knowledge were via sending and receiving emails (89%, n=16), video sharing (78, n=14), group discussions (78%, n=14), through WhatsApp groups (78%, n=14) and mobile phones (72%, n=13). Relatively few groups shared knowledge online, with (11%, n=2) doing so. However, neither group shared knowledge through blogging (0%) and Google Docs (0%) nor online forums (0%).

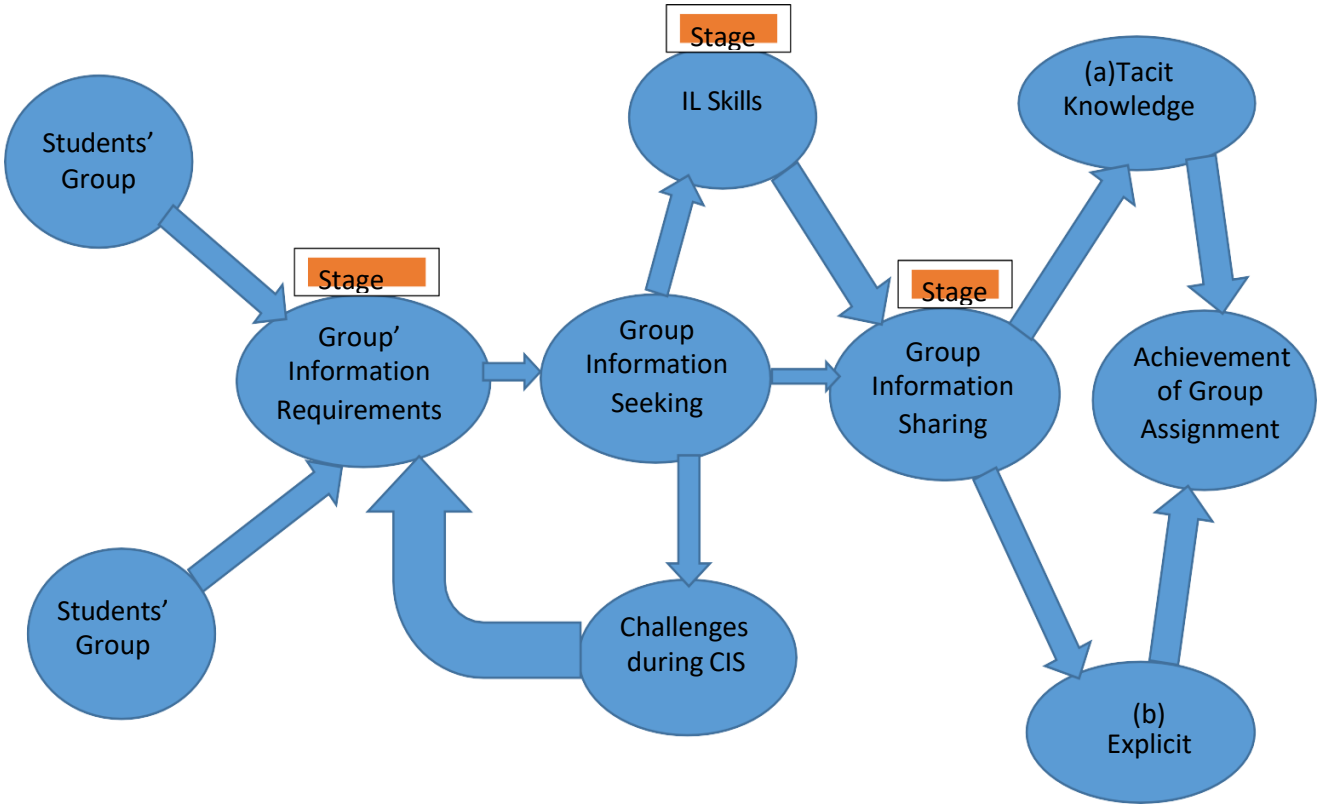
6. Recommendations

Tacit and explicit knowledge are shared knowledge in accomplishing VET students' groups' assignments. Matching results from interview data show that tacit knowledge (67%, n=12), as well as explicit knowledge (78%, n=14), is required by VET students' groups to accomplish their groups' assignments.

Markova and McArthur (2015) suggested that different individual skills, knowledge, expertise and experiences to the group commitment is what makes the group achievement work. FGD findings revealed that tacit knowledge needs to be documented in VET rural libraries. Documenting tacit knowledge assists VET students' groups to accomplish the groups' assignments given.

The hypothesized knowledge-sharing model to VET students' groups during CIS is vital for students' groups to share knowledge as illustrated below in Figure 1.2:

Figure 1.2: Hypothesized Knowledge Sharing Model of VET Students' Groups during CIS



This study proposes a knowledge-sharing model (refer to Figure 1.2 above) to VET students' groups during CIS when accomplishing their groups' assignments. For many years, still lacked a clear framework when studying information and knowledge as a resource (Hansen and Widen, 2017). Few empirical researches have been conducted to study this new CIS concept and it remains absolutely unclear to include the aspects of IL skills and knowledge used as the paramount aspects during the CIS process. This is supported by Ganaie and Khazer (2014), who showed the trends of information seeking behaviour research that the current researchers must study information requirements and information literacy dimensions together. Moreover, there is a strong link between IL skills and knowledge required by VET student groups to succeed in getting the required collective information requirements during the CIS process. When VET students' groups have appropriate modal with required IL skills and knowledge aspects, it guides VET students' groups to the systematic CIS approaches. This leads to the development of better VET students groups' policies and practices during CIS. Figure 1.2 below presents the hypothesised model of this study that proposes an appropriate model that improves accessing knowledge during the collective information seeking of students' groups in VET rural libraries at VTI in Tanzania.

The appropriate model was vital for improving knowledge sharing (tacit and explicit knowledge) during collective information seeking of students' groups to VET students' groups. The CIS model deemed necessary to include the aspects of collective information requirements for VET students' groups. The proposed CIS model required

to include IL skills and knowledge aspects used for accomplishing the groups' assignments given to all investigated VET institutions of college C in Lushoto district, college A in the Babati district, and college B in the Kondoa district.

Students' groups are required to share both tacit knowledge and explicit knowledge to accomplish group assignments during the collective information-seeking (CIS) process. The knowledge required to be shared by VET students' groups was either tacit or explicit during CIS in a library setting. The sharing of such tacit and explicit knowledge was induced by mutual trust, which plays a crucial role in knowledge-sharing initiatives during information seeking (Zaqout and Abbas, 2012). Trust, social networking, and ICT also fostered the sharing of tacit and explicit knowledge among graduate students during the development of tacit knowledge and enhanced performance (Zaqout and Abbas, 2012). The explicit and tacit knowledge had a positive effect on the achievement of the group assignment during CIS to VET students' groups. The results of this qualitative study demonstrated that VET students' groups in rural libraries lacked appropriate knowledge to accomplish the groups' assignments. Furthermore, the VET students' groups in rural libraries settings did not have the required skills for accessing the required knowledge (tacit and explicit knowledge) that helps to meet their collective information requirements. This call aims to ensure VET students' groups have an appropriate model with all required aspects of IL skills and knowledge that can solve their problems when given the groups' assignments to accomplish.

However, VET students' groups are required to access the required knowledge (both tacit and explicit knowledge) to improve IL skills during the CIS process. This was supported by Shahid *et al.* (2021), who revealed that respondents of the study required information to keep themselves up to date and continue their professional education to improve their professional knowledge, which was a good sign regarding the purposes of library resources' usage.

The study recommends that VET rural libraries subscribe to professional databases for VET courses offered in rural settings. This ensures the efficiency of knowledge sharing to VET students' groups when given group assignments to accomplish. Subscription of professional databases ensures the availability of e-resources for VET students' groups to share both tacit and explicit knowledge in VET rural libraries.

There is no doubt that VET student groups in VET rural areas require a CIS policy for knowledge sharing during the CIS process. FGD findings revealed that, it is vital to have a CIS policy to assist VET students' groups in accessing both tacit and explicit knowledge during the CIS process. Failure to have a CIS policy in place leads to VET students' groups not getting the required collective information requirements to accomplish the given assignments. Hence, considering the importance of required information literacy (IL) skills and knowledge aspects during the CIS process triggers CIS policy formulation for VET students' groups in rural areas.

Information literacy (IL) skills were required by VET students' groups for sharing knowledge on the internet to accomplish groups' assignments. The IL skills were

required by VET students' groups to get the required knowledge for groups' assignments. During FGD, respondents suggested IL skills need to be taught as the compulsory subjects to VET students' groups to first year and second years that assists knowledge sharing on the internet.

The results of this study reveal that, VET rural libraries require to improve the internet to boost the high usage of explicit knowledge. Corresponding results by Bashorun (2016) recommended that, university authorities should upgrade the internet bandwidth in order to increase the speed of internet connectivity for easy downloading and uploading scholarly content. However, during the interview, respondents mentioned the problem of the internet in library settings caused VET students' groups not to be able to access explicit knowledge for accomplishing their groups 'assignments.

Conflict of Interest Statement

The authors declare no conflict of interest.

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