

Information and Communication Technology Literacy of Community Learning Center Managers in Non-formal Education Management during the Covid-19 Pandemic

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Abstract

This research aimed to understand the mastery of information and communication technology literacy for Community Learning Center (CLC) managers and the learning process during the Covid-19 pandemic. It was carried out because ICT literacy for CLC managers is key to CLC's success in adapting and dealing with community changes caused by the pandemic, which has various impacts on education. This is an explanatory sequential mixed research design carried out on all CLCs in the D.I. Yogyakarta regions. Quantitative data collected by submitting an online questionnaire to 121 CLC managers, with only 57 returned. The collected data analyzed to determine the CLC activities using Excel software and qualitative analysis techniques. Triangulation, affirmations from informants, and expert judgments done to obtain data validity. The results showed that CLC managers had mastered ICT literacy as an instrument to adapt to the crisis, although they were still dominant in the use of ICT for learning and management. This literacy mastery is inseparable from the learning process taken by managers, both independently and collectively. Therefore, the development of ICT literacy for managers needs to be carried out based on objective needs, using ICT advancements and integrated with their main work to ensure large-scale benefits.

Keywords: Community learning center, information and communication technology, literacy, manager, nonformal education.

Introduction

Community Learning Center (CLC) is a non-formal educational institution managed by individuals, organizations, and communities, and it also plays a strategic role in producing good citizens. This institute is sustained based on the active participation of the parties involved. Meanwhile, it aims to provide learning opportunities, create a form of communication between the community and the government, provide informative literature and training programs for the locals, as well as promote them to become fond of researching (UNESCO, 2013). In Indonesia, this institution

contributes to increase quality access, competitiveness, relevance, and academic accountability for citizens, specifically those unable to attend formal education due to certain factors, such as poor economy, culture, geographical location, and lack of facilities.

According to the Indonesian Ministry of Education and Culture (2020), the number of CLCs in the country is quite large, approximately 10,060 institutions. The majority, relatively 9,970, are managed by the private sector or the community. Therefore, judging from its development, there is an uneven distribution of these institutes in

various regions. For example, in Yogyakarta Province, which is regarded as a city, the number of CLCs is quite large, approximately 116 institutions were recorded in 2020. However, there was a decrease compared to the 278 institutes realized in 2019. This was caused by various problems such as funding, management, and managers' creativity. As potency used to achieve national developmental goals, the management of CLC as a community-based educational institution needs to be developed to offer greater benefits to society optimally.

For CLC to be able to adapt to environmental changes, namely the Covid-19 pandemic that has been occurred and caused negative effects on education, CLC managers as individuals who are urgent in achieving educational goals must have the ability to manage ICT (Manco-Chavez et al., 2020; Kara, 2021). This literacy is an instrument in dealing with a dynamic environment by accessing, managing, utilizing, and optimizing ICT both the learning and the managing educational programs (Santos et al., 2019; Kanchai, 2021). Empirically, the urgency of ICT literacy is based on information obtained from preliminary researches in the form of discussions with CLC managers with various educational backgrounds, experiences, and expertise that minimally utilize this digital tool in learning management. The findings reinforce this condition that these institutions are unable to optimally manage non-formal educating programs due to managers' poor innovative abilities. This is in addition to the behaviors that tend to be strongly oriented towards academics (Tohani, 2010), inadequate fund-raising (Rizka & Hardiansyah, 2017), less diverse activities, traditional means of socialization, unorganized learning plans (Raharjo et al., 2015), lack of building facilities and services (Darlan, 2017), and ICT utilization (Fauziah et al., 2020).

Its skills need to be developed either through self-research or knowledge acquisition from external parties. This means that they have to recognize, master, adapt and apply ICT capabilities in managing non-formal educational services to create adaptive or resilient organizations in times of crisis to improve the citizens' standard of living. This is supported by several previous researches which stated that learning behavior has a positive

influence on improving organizational performance, such as increasing employee creativity, sharing of knowledge, collaboration, and developing social intelligence (Salleh et al., 2012; Kyoung Park et al., 2014; Roxas et al., 2014; Ions & Minton, 2012; Nugroho, 2018; Kong, 2017; Oh & Han, 2018). However, the possession of this skill makes it possible for managers to ensure that CLC is able to keep up with the dynamics of change (Senge, 2010; Sarder, 2016).

Regarding the aforementioned description, this research was carried out to optimize managers' roles and functions related to managing non-formal educating institutions to empower the community. This also includes the in-depth understanding of ICT in adapting to the Covid-19 pandemic, which is a valuable input to empower managers perceived as the spearheads of producing knowledgeable students that possess the competency to compete in an ever-changing educational environment.

Literature Reviews

CLC is a place for informal learning outside the formal educational system, located in both rural and urban regions, usually built and managed by the local community to provide various academic opportunities. This led to development and improved the standard of living (UNESCO, 2006; 2011; 2013) for the benefit of citizens, families, and society (Smith, 2005). Basically, this institution was established by, from, and for the community, or is the embodiment of an academic institution based on the principle of community-based education (Jalal & Supriadi, 2000). CLC is a learning center where every member is expected to actively and independently participate in learning, thereby contributing to the development of their area (Kamil, 2006; Jennings, 2005) by organizing various non-formal educative programs, namely basic literacy, life skills, self-development, leisure, parenting, literacy, youth, and even community empowerment initiatives. In the long run, individuals who are keen on learning are produced, and they tend to influence their environment and society.

As a dynamic educational organization, CLC is faced with the challenge of improving the

macro environment, which is often affected by both natural and social disasters (Rodriguez et al., 2018). Currently, the Covid-19 pandemic experienced globally has caused various impacts on the economic, socio-cultural, and environmental sectors. In the academic field, it has led to the loss of learning opportunities for both students, and adults, as well as an increase in fees (UNESCO, 2016; 2020). This pandemic also affected the children's higher-order thinking abilities due to a lack of learning facilities and their parents' inability to support them (Graumann, 2020). In addition, graduates encountered difficulties in finding or creating jobs, learners experienced boredom due to researching at home, there was a spike in the parents' stress level in terms of aiding their children, disruption of teacher-student relationships, and limited access to information and communication facilities (Jaramilo, 2020; Aji, 2020; Sintema, 2020). However, the positive aspect is the creation of awareness related to the maintenance of personal and environmental health care, educative actions that seek to develop the people's abilities in terms of working during the pandemic. This is in addition to the large increase in information and communication technology literacy in various sectors, including the emergence of internet-based or e-learning.

The pandemic triggered organizations to develop strong resilience capabilities by using their financial, social, and technical resources to adapt or anticipate certain changes and irregularities (Tengblad & Oudhuis, 2018; Ducheck, 2019). This is required for several reasons, namely to save lives and property by adopting effective measures, building stronger and safer communities. It also aids in understanding current exposure levels and the potential impact of adverse events, helping organizations take responsibility for their actions, enabling the identification of its capacities to cope with detrimental effects and foster self-reliance, helpful behavior, improvement, and cooperation, among others all individuals. Resilience ensures sustainability, such as redundancy, flexibility, and the capacity to learn and reorganize (Surjan et al., 2011).

As individuals that urgently need to adapt to this change, CLC managers are expected to be information and communication technology

(ICT) literates, an innovative capacity in developing non-formal educational institutions and programs. Therefore, they ascertain an effective, efficient and meaningful process of empowering individuals and communities and being competitive to obtain existing societal resources (Zawislak et al., 2012; 2015; Drucker, 1993). ICT is described as a variety of technological tools and resources used for communicating, networking, commercial and educational purposes, and gaming to create, disseminate, store, and manage information on the internet, computers, game software, e-mail, and social media platforms (Rahman, 2014; Wempen, 2015). Its literacy describes the knowledge and skills needed to use these digital tools (UNESCO, 2011; Chung & Yoo, 2021; Huvila, 2012). According to Ferrari (2012), these competencies include information management and sharing, collaboration using ICT, ethics and responsibility, evaluation and problem solving, and technical operations, as shown in Table 1.

Table 1: Competencies of ICT literacy

| | |
|---------------------------------|--|
| Information management | Identify, locate, access, retrieve, store, and organize information. |
| Collaboration | Link with others, participate in online networks and communities, and constructive interactions. |
| Communication and sharing | Communicate through online platforms, taking into account privacy, safety, and etiquette. |
| Creation of content & knowledge | Integrate and re-elaborate prior knowledge and content, and acquire new skills. |
| Ethics and responsibility | Behave in an ethical and responsible way related to legal framework awareness. |
| Evaluation and problem-solving. | Identify digital needs, solve problems through this means, and assess the information retrieved. |
| Technical operations | Use technology and media, perform tasks using digital tools. |

Similar research was carried out by Griffin (2012), which stated that ICT literacy as a relevant skill is described using 3 strands. This includes working with information, creating and sharing it, and utilizing ICT responsibly. Griffin (2012) stated that its literacy comprises

various knowledge, skills, and attitudes in more detail. (a) The aspect of knowledge includes accessing and evaluating ICT, understanding available opportunities, comprehending the way and manner this digital tool works, analyzing, and creating media products. (b) Skills include accessing ICT effectively, efficiently, and critically, using and managing information accurately and creatively, producing media products, and effective technological application. (c) Attitudes or values involves being open to information, using and managing it in a responsible manner, respecting privacy and intellectual rights, utilizing ICT honestly and based on integrity.

In accordance with this digital tool, the management of the educational sector is used to develop capacity building, teacher training initiatives, and partnerships. Community relations facilitate documentation and information sharing, develop partnership networks with external parties, and trigger the implementation of information monitoring and educative administration to empower society (UNESCO, 2006). In the learning aspect, ICT is used to: (a) develop the students' creativity, for example, digital applications such as Microsoft Office, Macro flash, and Lectora, used for presentations, (b) boosts collaborations, e.g., the use of social network web applications such as facebook, twitter, friendster, etc, utilized in learning activities, (d) expedite communication through the use of facilities, namely e-mail and e-course that enables the students to interact with one another, their teachers and even with stakeholders that tend to assist the academic process, and (e) serves as a learning media, for both educators and students, to carry out presentations and learn independently, using websites and multimedia (Kai & Rebecca, 2017).

The ability of CLC managers to be ICT literate has a positive impact on education management, such as making learning possible in an environment that does not allow the face-to-face approach, saves costs, ensures the rapid delivery of the learning process, and expands opportunities. Furthermore, it offers student-centered solutions in a qualified and integrated manner, provides attractive academic methods, develops students' enthusiasm for technology, and new communication models, besides

generating space for training, information, debate, reflection, and breaking down traditionalism barriers in the classroom (Hernandez, 2017; Haijun et al., 2015; Rahman, 2014; Dunworth & Scantlebury, 2012). There is also the possibility of increasing the effectiveness and efficiency of institutional management, such as improving the quality of educators, saving costs, expanding access and equity, triggers support, economic competitiveness, and partnerships (Karunaratne et al., 2018; Canbay & Cuhadar, 2020; Gordilo et al., 2019; Waluyo, 2020).

Research methods

Research design

This research adopted explanatory sequential mixed methods proposed by Creswell (2018). First, the quantitative data collection results were evaluated, followed by the interpretation of the qualitative analysis. This research was carried out on all CLC managers in Yogyakarta Special Region, including those in rural and urban areas. The selection of this institution as a research sample was determined based on quotas and considering its level of distribution, activities, and progress as an official government agency, namely the Provincial Education and Culture Office and the Ministry of Education and Culture.

Data collection

The data collection was acquired by using the following methods, namely questionnaires or surveys, interviews, and documentation. The survey was carried out directly on all CLCs in DIY by booking online appointments with managers, using google form. The data were acquired from each District or City of the Education Office in Yogyakarta. The submission of the questionnaire was carried out by personally communicating the purpose of the research through WhatsApp (WA) messages and telephone calls. It consisted of 71 questions including, negative and positive impacts of Covid-19 (11 questions), response to the pandemic (19 questions), the relevance of ICT literacy (7 questions), learning processes and outcomes adopted by managers (23 questions), outcomes of ICT literacy (6 questions), and the need to improve ICT literacy in CLC managers (5 questions). A

Likert scale (0 to 4) was used before the questionnaires were distributed, and it was validated by non-formal education and learning technology professionals in the form of expert judgment. Managers were directly interviewed, either through face-to-face or zoom meetings, in accordance with the respondents' agreement or willingness. They were purposively determined based on the distribution of CLC in urban and rural areas. In addition, interviews were conducted using a guide with the same research focus as the host, which was distributed online. Finally, the documentation process was used to ascertain the CLC managers' performance relating to ICT implementation both in managerial and academic activities, such as online learning and reporting.

Data analysis

In order to obtain findings that are in accordance with the research objectives, the acquired data were evaluated using quantitative and qualitative analysis techniques. Quantitative data, usually in the form of numbers, were analyzed using Excel software to facilitate the conclusions and delivery of information to users. Meanwhile, those of qualitative were evaluated through the stages of condensation, data presentation, and drawing of conclusions (Miles & Huberman, 2014). The information acquired from interviews and documentation processes were selected, analyzed, and grouped according to the research sub-focus and further reviewed and interpreted.

Data validity

To ensure that the qualitative data is valid, triangulation was carried out by checking the validity of the acquired information. This includes those obtained from interviews, observation, documentation, and ascertaining the respondents' source. In addition, the qualitative data was confirmed or approved by the respondents immediately after the interview. Meanwhile, to obtain the validity of the questionnaire and the ICT literacy

improvement model formulated for CLC managers, expert judgment was carried out to seek the opinion of education and learning technology professionals.

Results

The results refer to the research focus, which includes the possession of ICT literacy by CLC managers, the adopted learning process, and the need for its development to improve the quality of non-formal education.

ICT Literacy for CLC Managers

The Covid-19 pandemic has both positive and negative impacts on managers in terms of carrying out their duties and functions related to the management of CLCs. Meanwhile, the positive impact refers to the benefits realized during the crisis. On the contrary, the negative ones are related to influences that cause the disruption of institutional management activities. The results proved that the pandemic has a negative effect on managerial aspects in terms of learning, funding, and producing competent graduates. Generally, Figure 1 shows that these aspects were negatively affected. Learning difficulties and the decrease in its quality were commonly experienced by CLC. This is also consistent with the results of the interviews conducted by Sah, which stated that learning is not optimal due to the lack of interactive sessions between tutors and residents (as students).

"...the Covid-19 pandemic generally affected every aspect of life, specifically in the villages, where all departments experienced challenges at the beginning of the outbreak...particularly in C package learning, it was difficult to assess the residents, that found it challenging learn without the guidance of educators...however they diligently executed their tasks by asking questions on WA groups." (Interview, June 19, 2021).

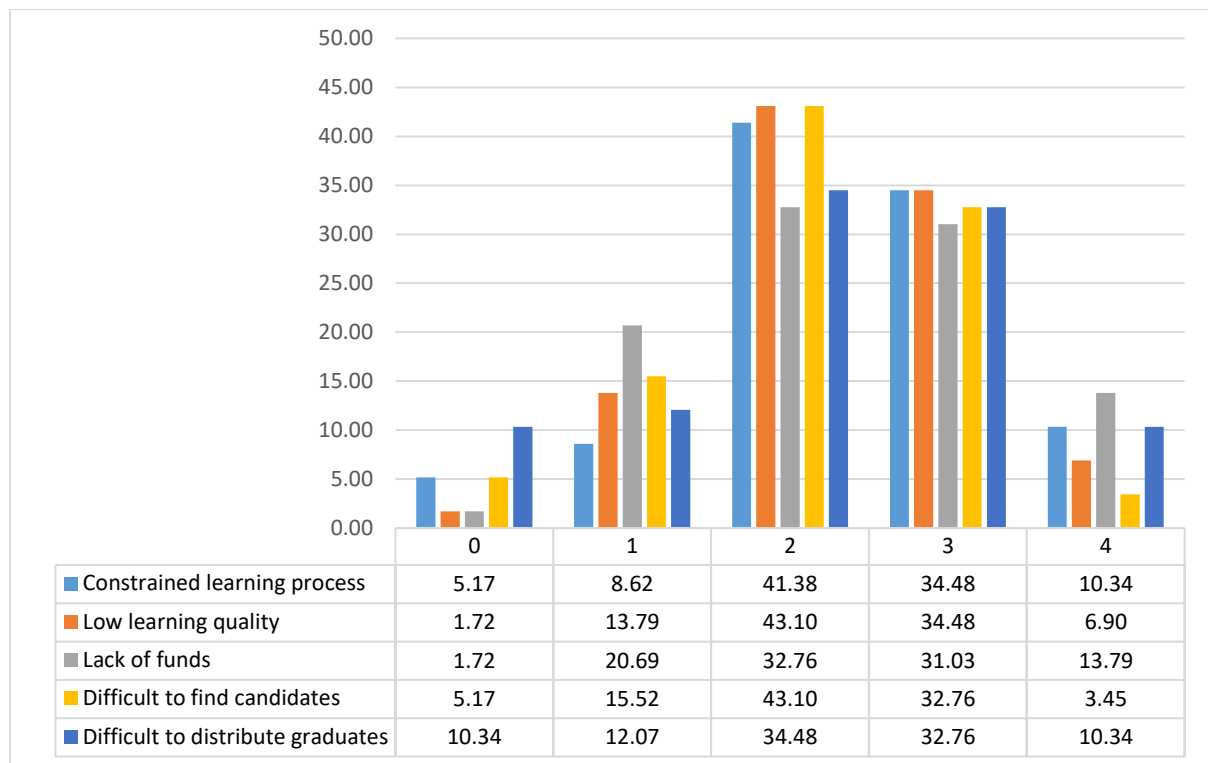


Figure 1: Negative impacts of Covid-19.

The positive impacts of the pandemic on managers are shown in Figure 2. The results imply that Covid-19 contributed to a better understanding of the institutions’ strengths, opportunities, and performance evaluation, irrespective of whether it was not always experienced. In addition, it caused managers to increase their solidarity with the staff (39.66 percent) and creatively adjust to difficult situations (48.2 percent).

Related to this, one of the respondents named Mun stated that Covid-19 caused certain changes in the learning modes. The respondent further reported that the pandemic brought about significant alteration in the management of CLC, which was originally face-to-face, and has presently shifted to the use of WA groups, Instagram, and websites. Inevitably, the learning of C package program was performed online through video calls, WhatsApp, WA chat, zoom, skype, and google meet. This adaptation is enough to bring changes related to the utilization of technology by both educators

and students. Similar research was stated by Wij, which stated that the pandemic led to the switch to online learning, including the coordination of meetings with management, etc. At the beginning of the crisis, this change was extremely difficult considering that Wij that was one of managers, was no longer young, however, Wij insisted on learning and trying to adapt (Interview, 21/6/2021). Therefore, the pandemic caused the majority to implement ICT.

Managers responded to this situation by adopting various actions. It is observed in Figure 3 that the majority often applied efforts in response to the pandemic, both in the form of disciplinary measures, strengthening cooperation, carrying out researches, and being challenged to be productive. However, they failed to provide resources used to curb the spread of the virus, e.g., funds and facilities. This shows that managers did not anticipate its negative effects, e.g., failure to provide convenience in utilizing necessary resources.

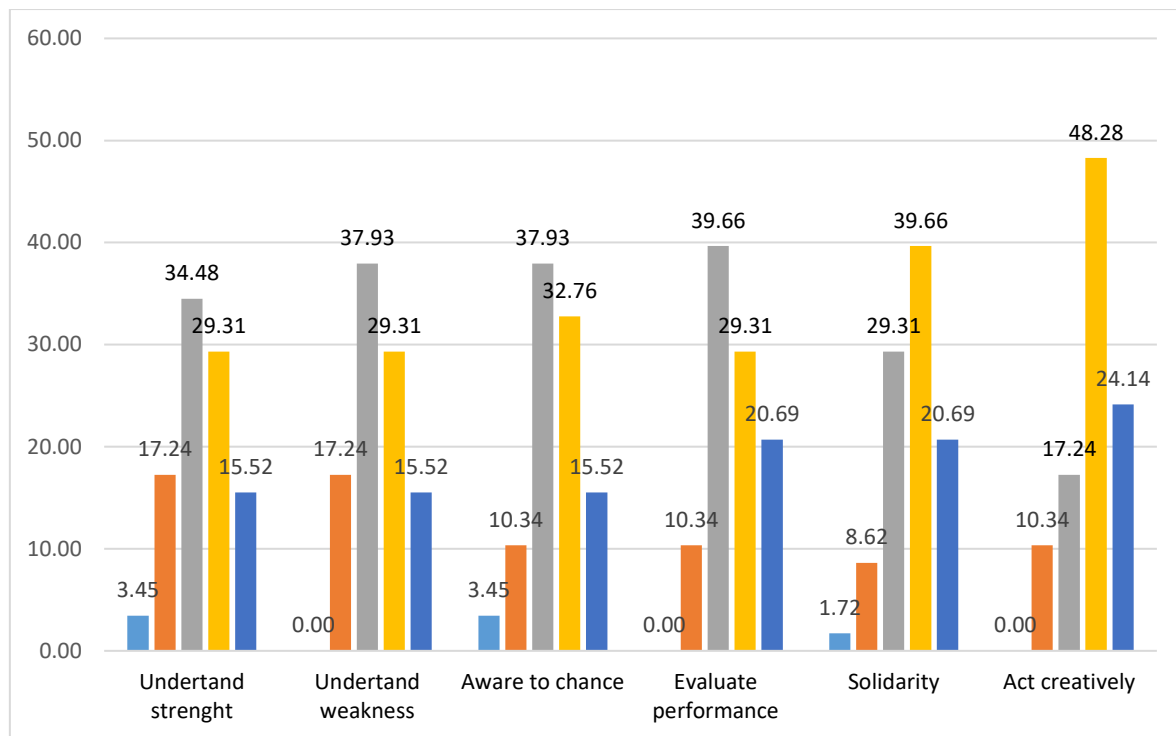


Figure 2: Positive impacts of Covid-19

The information obtained from the interviewed manager's shows that the majority believes that God Almighty inflicted this biological disaster, therefore, there is a need to be patient. According to a respondent, the pandemic is imposed by the Almighty, and as humans, there is a need to endure it and protect ourselves to survive. In terms of learning, the initial process was burdensome because it was conducted online, and there were rules issued by the local education office that had to be adhered to. Together with other managers, War tries to carry out this procedure according to the existing policy based on acceptance and effort. Similarly, Sah stated that this incident needs to be accepted with sincerity. On the contrary, Mun reported that the pandemic led to

challenging activities that have to be creatively resolved.

"...students' acceptance is through telephone, WA or e-mail, and the website. There are many efforts to observe the various evaluations in the form of questionnaires that shows good management performance, although it takes time and is realized both during and after working hours. In addition, there seems to be no limit to work-life balance. Instead, there is integration... for managers, this is a creativity challenge, for example, because the learners are Islamic students (santri), the assessment of the religious subject is based on their activities. Then for learning that is difficult to carry out online, they engage in daily practices at home, such as helping their parents in the rice field."

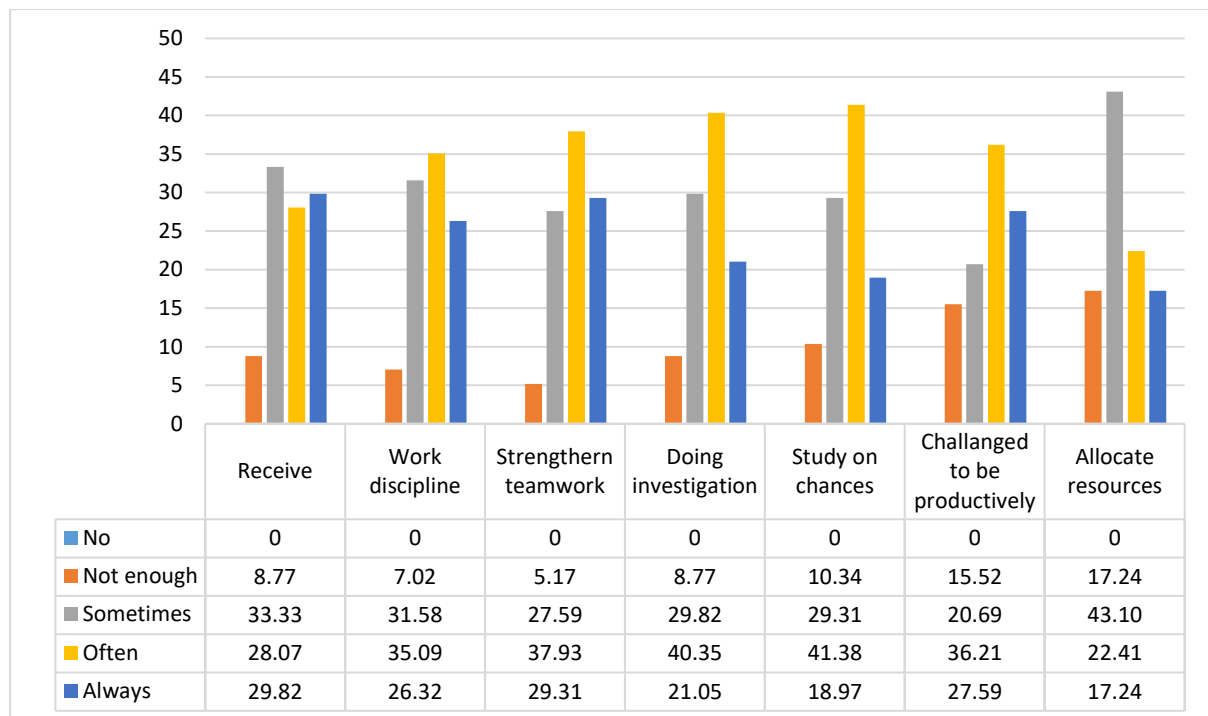


Figure 3: Responses to the Covid-19 pandemic.

The use of ICT in CLC management is shown in Figure 4, which implies that managers have adopted the program in institutional management. Therefore, based on the 7 aspects of its utilization, the CLC managers often used ICT for the following: i) online learning process by relatively 36%, ii) promote educational services to the public by 43%, iii) utilize social media is 43.10%, and iv) conduct

online education consultations by 37.93%. However, the majority have not formulated online modules to streamline learning during the pandemic and to develop human resource capabilities. This is indicated by the number of those who stated that they did not do enough, which is relatively 31.03% and 36.21%, respectively.

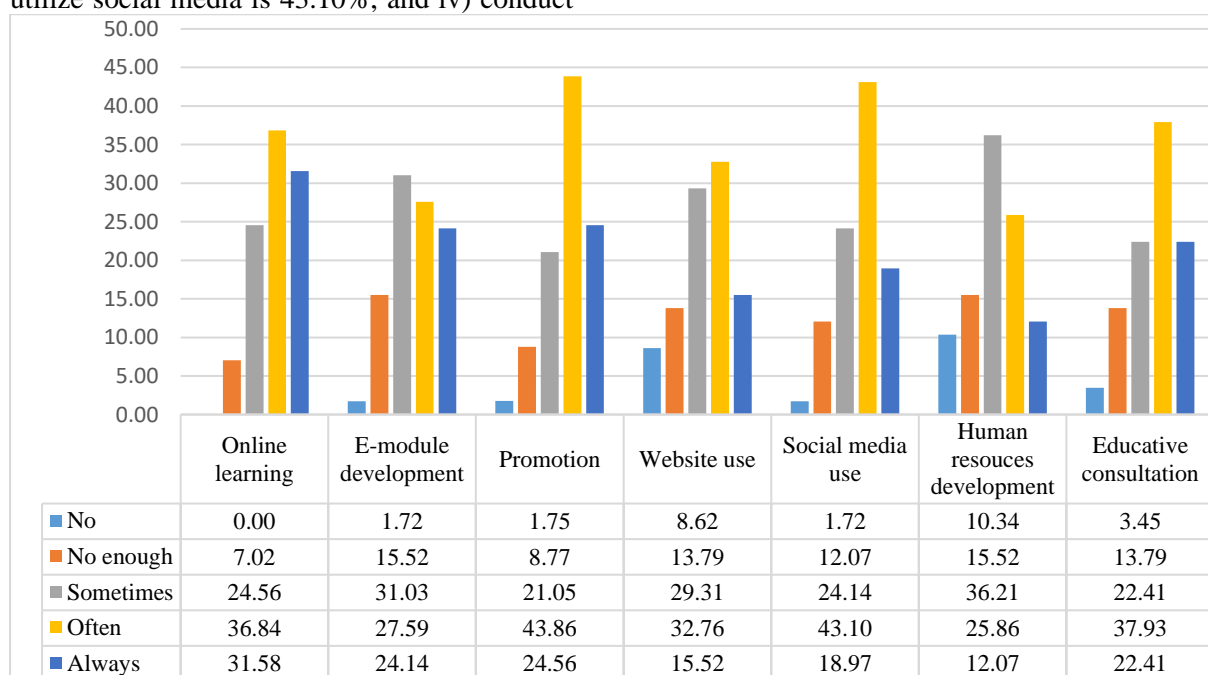


Figure 4: ICT utilization in the time of the Covid-19 pandemic.



Figure 5: Google meets C package class.

During the pandemic, the use of ICT was unavoidably the main instrument for carrying out certain activities at the CLC. In the practice of institutional management, it was utilized by managers. For example, they created websites and used e-mail, Facebook, and Instagram to provide information regarding educational program services, student registration, publication of activities, and the submission of accountability reports to stakeholders such as supervisors, education offices, and universities. In learning, the use of WA groups, telegrams, Google classrooms, and others was dominantly carried out by managers as a way of executing online learning according to a predetermined educational schedule as reported by War as follows:

“Each educator organized the students in groups according to the subjects...with assignments and discussions delivered in these groups...”.

This online learning demands the educators' and students' habituation or adaptation. Although WA and zoom are commonly used, a good number of people are familiar with other learning applications such as google meet and telegram, therefore, they need to adapt. Related to this, Figure 5 shows an overview of learning carried out through Google Classroom.

The online process carried out by CLC, helped to promote continuous learning activities in this burdensome situation and also a means of concern. This approach is presumed to have a different atmosphere and intimacy, even among educators and students. Managers are unable to monitor the learners' activities directly.

Therefore, it is feared that the academic objectives are not optimally realized. Both the educators and students encounter certain difficulties, including providing an objective assessment of learning outcomes, specifically in terms of attitudes and morals. Although this is challenging, managers are able to provide an assessment of the students' learning outcomes based on their behavior prior to online learning. However, the adoption of face-to-face process aids to assess their behavior regularly as stated by War is as follows:

“...The students' attitude is assessed by first determining (face-to-face) whether they are diligent or not.”

Learning Process of CLC managers

Managers need to be ICT literate in order to adapt to environmental changes, specifically during the Covid-19 pandemic. This boosts their abilities to carry out the learning process both independently or collectively. Figure 5 shows the independent learning process carried out in various ways. The majority of managers occasionally engage in self-taught, use of internet, books, and references, and ask to be taught by friends or colleagues. They often enroll in internships or tend to research elsewhere, as indicated by the respondents' answers approximately 31.58%.

In particular, the independent learning process to master ICT skills is carried out through social media, e.g., WA, telegram, and quiz, in order to support institutional management. Managers learn by asking questions and obtaining information from the internet or other sources according to their desire to learn. Irrespective of the fact that War is old, War is able to understand the way the WA functions by consulting the institution's administrators. The goal is that War wants to ascertain that the online classes are effectively executed, by ensuring adequate communication between the students and tutors as an effort to monitor learning. Similarly, Mun stated the following:

“Learning independently using various applications such as zoom, skype, Google meet, and different media, namely quiz, was initially worrisome to me in terms of making mistakes. On the contrary, it is interesting and helps in providing a media shared with fellow students”.

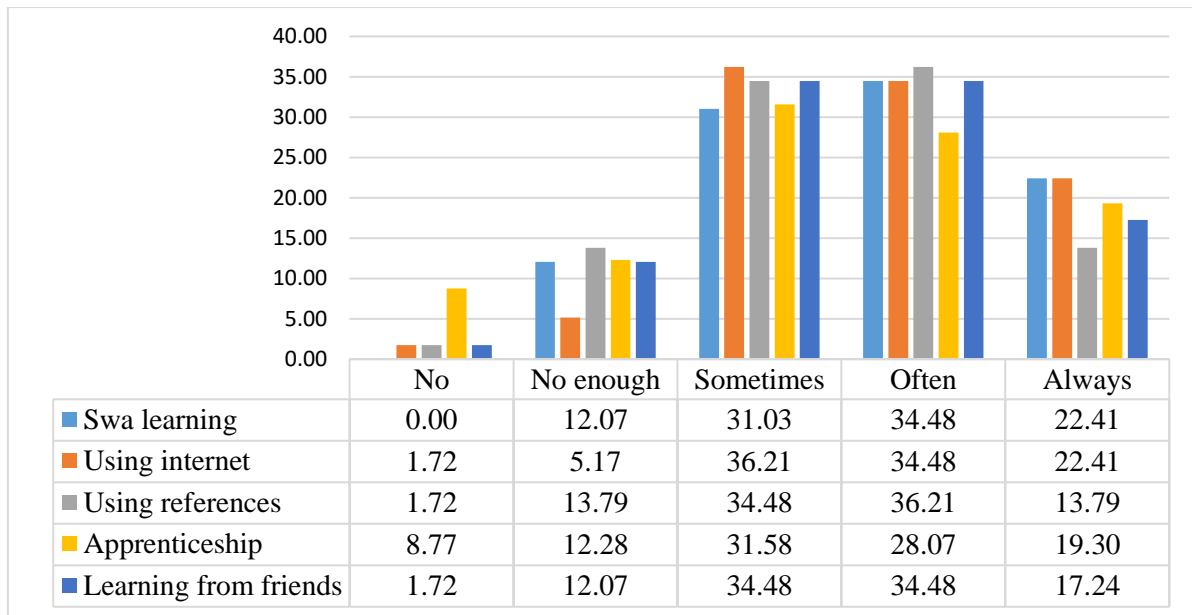


Figure 6: Independent learning process by managers

The learning process involves other parties forming research groups, attending seminars, workshops, training, or listening to experts. Figure 6 shows that all managers adopt this process as an educational resource for ICT mastery. However, this information shows that

relatively 19.89% do not utilize the services of experts, as opposed to 13.79%. This means that the consultation of experts in the management of educational services has not been widely practiced.

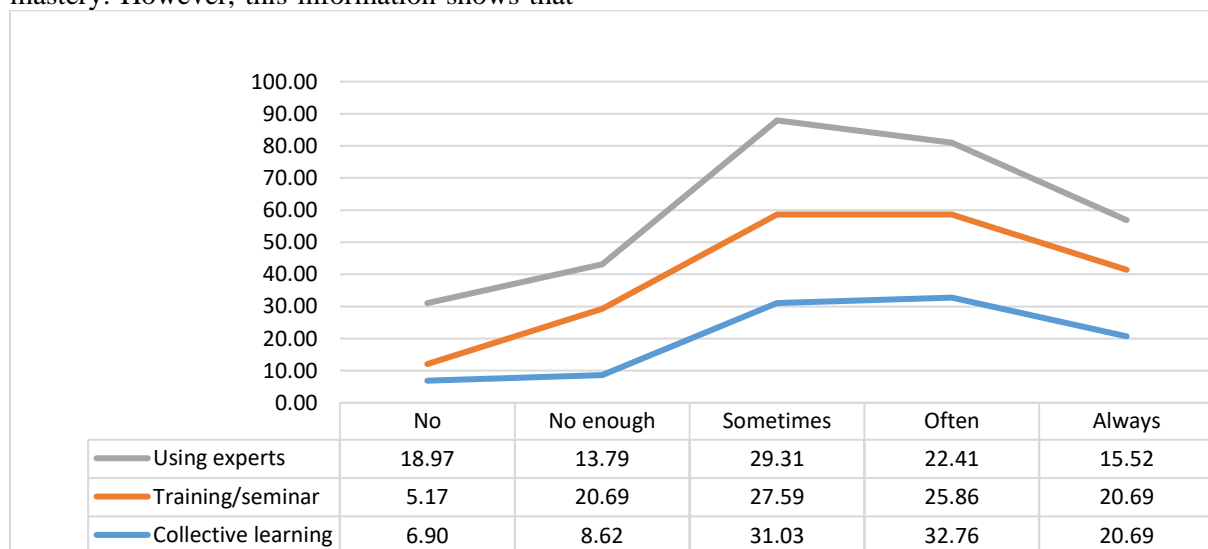


Figure 7: Collective learning of managers.

Qualitatively, collective learning is carried out through a joint process coordinated by managers to share experiences and knowledge. This is usually in the form of regular meetings periodically held with the tutors. In addition, various topics were discussed as reported by Ek, the manager of the CLC institution in Yogyakarta, which stated that every month the educators and tutors conduct joint activities or meetings (arisan) for the purpose of sharing

their experiences during online learning and motivations to get through this pandemic. However, routine meetings are usually among managers in the areas or cities where representatives are members of the CLC Forum at the District and Provincial levels. In addition, WA groups are also used to share information as well as to communicate problems encountered. Managers also participated in joint training, specifically in managing data or

information related to basic academics, which are carried out by the local Education Office using the zoom platform. They are technically trained on the use of applications for planning and evaluating activities submitted to the local Education Office, e.g., reporting the use of educational, operational funds.

The learning process carried out both independently and collectively changed managers' behavior in terms of knowledge,

skills, and attitudes or values. Figure 8 shows the learning process relating to knowledge. They are able to understand ICT's existence and function, ways to access it, the work procedures, advancement opportunities, means of analyzing and creating media based on its utilization. The average percentage of all these aspects is relatively 42.07% for those who experience it occasionally and 20.34% for those who encounter it regularly.

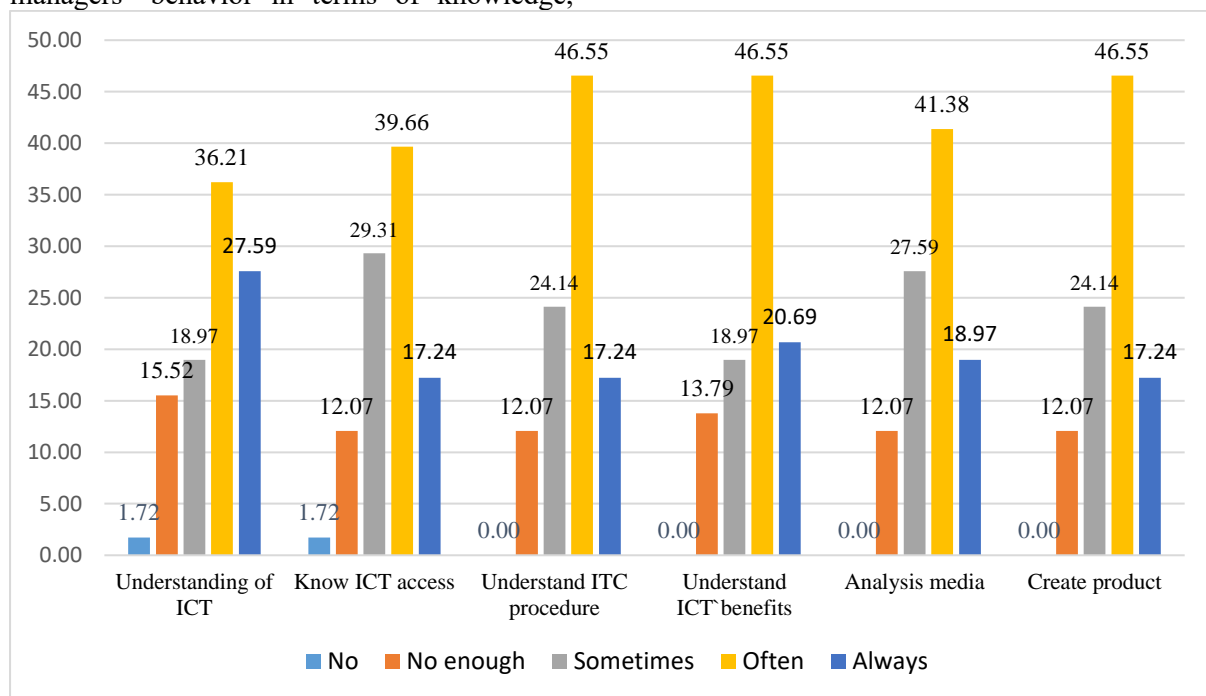


Figure 8: Learning results of the knowledge aspect.

The learning outcomes on the skills dimensions are slightly different. Figure 9 shows that the learning process carried out collectively and independently increases their abilities to use ICT in terms of accessing, creative management, developing media, and

effectively applying information and communication technology. This is indicated by the percentage of managers, relatively an average of 41% stated that they often experienced this process and 23.2% reported that they encountered it regularly.

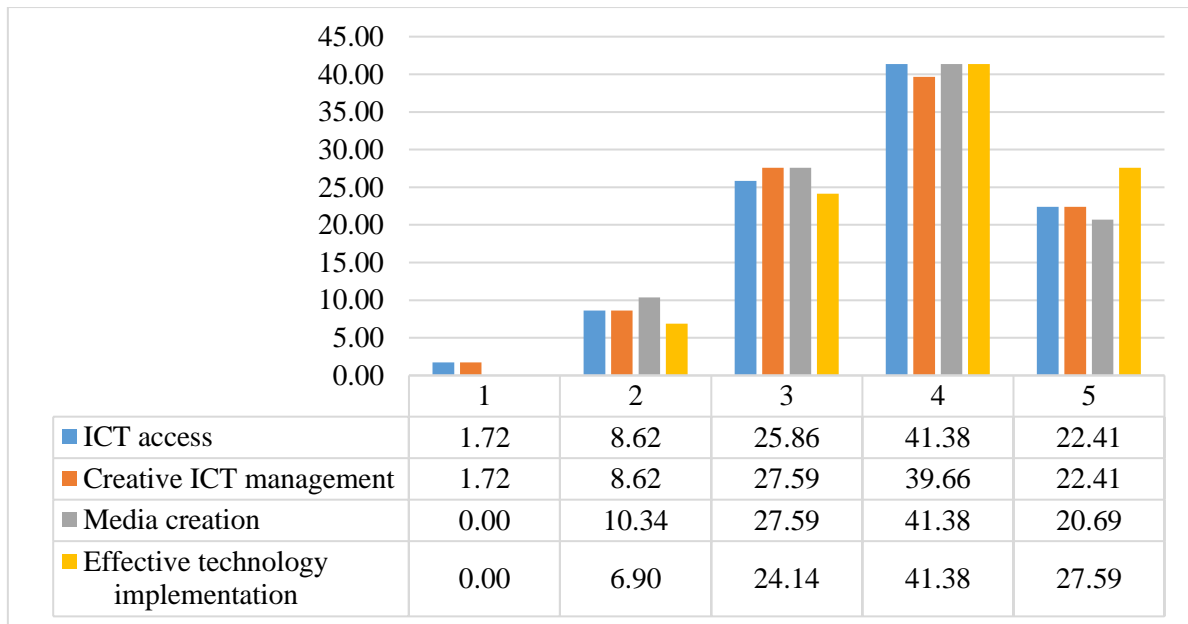


Figure 9: Learning results of the skills aspect.

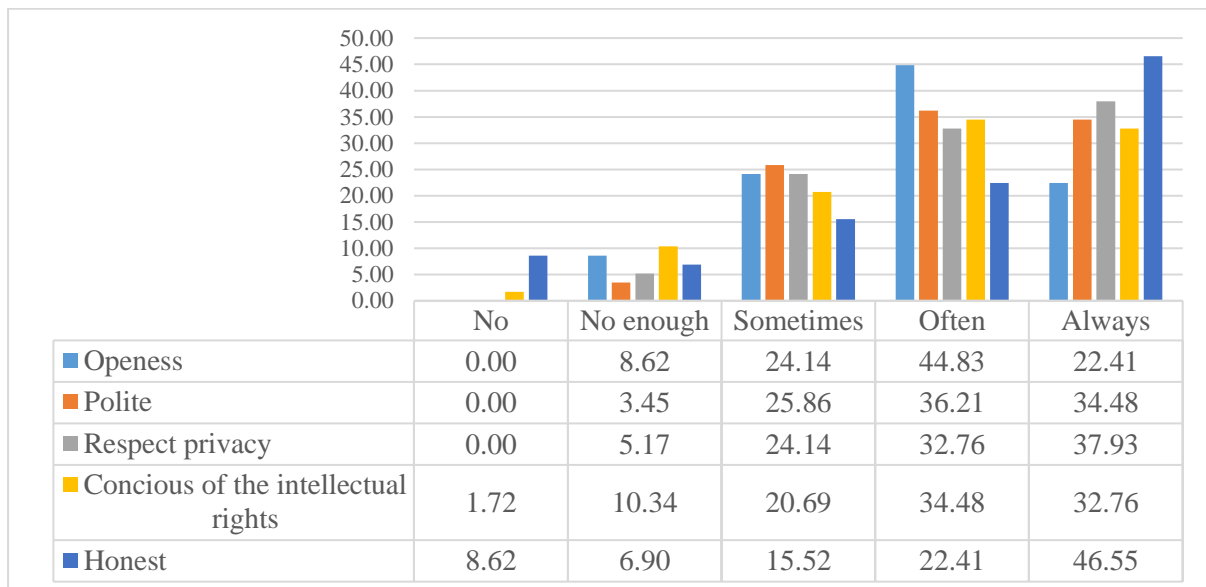


Figure 10: Learning results of the values/attitudes dimension.

In terms of values/attitudes dimension is slightly different from the other 2 aspects. Figure 10 shows that in all sub-aspects of attitude, the majority of managers stated that they often experienced being open to information (44.83%), polite when using the internet, social media. (36.21%), respect the privacy of others (32.76%), do not violate

intellectual property rights (IPR) (41.38%), and effectively apply technology (41.38%). Even in the honesty sub-aspect, the majority of their answers were relatively 46.55%. It simply implies that managers' positive attitude is developed through ICT use during the Covid-19 pandemic.

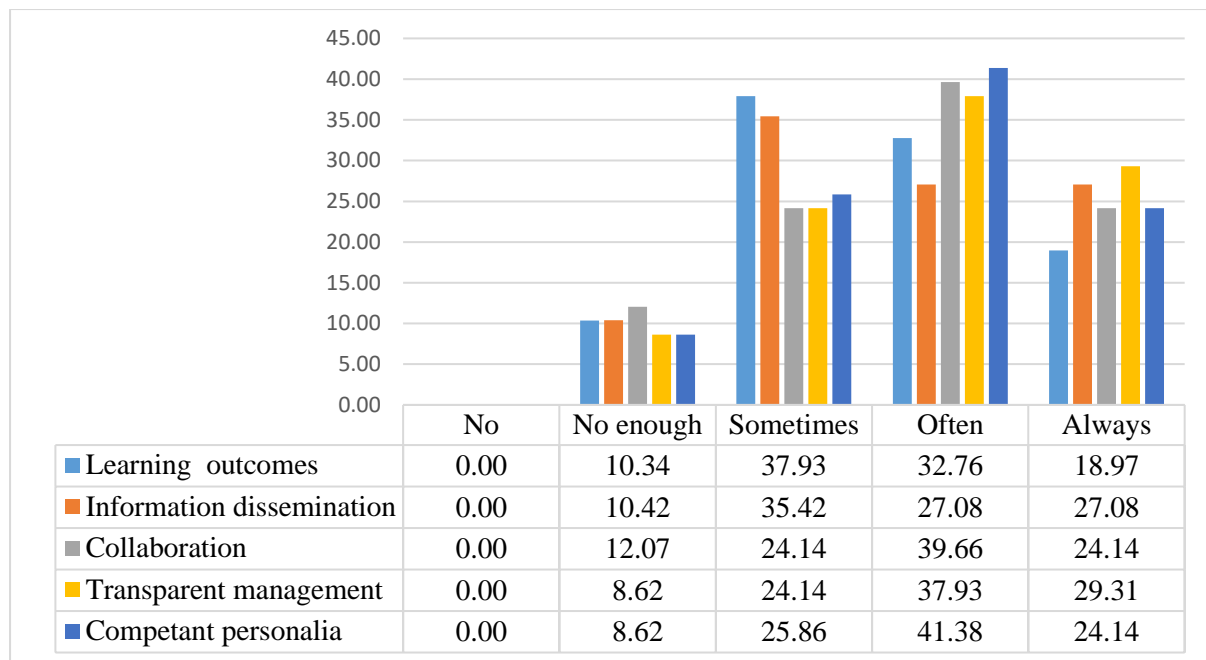


Figure 11: Outcome of the learning results

They try to apply the acquired knowledge in their daily work to improve the quality of learning outcomes, efficiently and effectively disseminate information to the public, increase collaboration with the community, boost transparency in the management of institutions and the educators' competencies. According to figure 11, none of managers stated that they did not implement the learning outcomes. This means that the process was optimally applied in terms of carrying out their roles and functions. Based on the average percentage of all indicators, it is a known fact that some managers relatively 10.36%, slightly applied the learning outcomes, 30.41% occasionally applied it, 34.36% often adopted the procedure, and 24.87% always implemented the process. In accordance with this information, it was concluded that the existing learning outcomes are not automatically applied continuously or

directed in the practice of managing CLC institutions.

The Need to Develop ICT Literacy

The need for managers to be ICT literate is because it is relevant and its development provides real benefits in improving the managerial and learning quality in CLC. The results as shown in Figure 12, imply that managers desire to develop online media, conduct e-learning, develop institutional management information systems, create websites, use social media, and other learning communities. Based on the figure, it is evident that all of these are deemed necessary with an indication to achieve a response for each aspect which led to an average of 20.76% for managers that slightly experience it, 42.23% of those who often encounter it, and 31% of those who always experience the need for ICT literacy development.

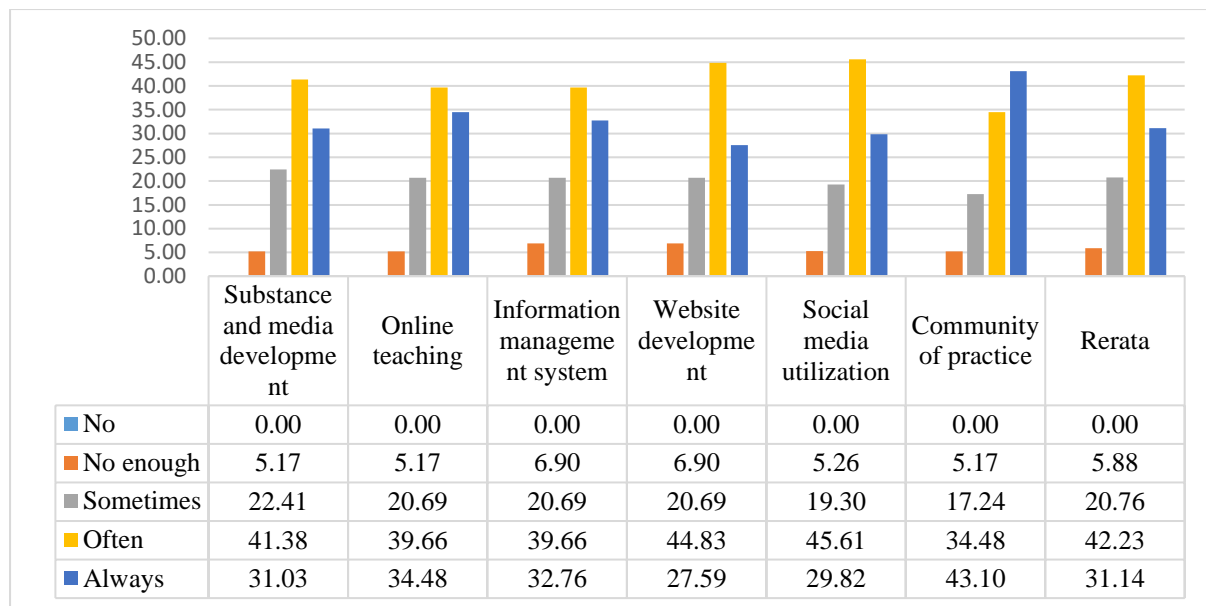


Figure 12: The need to develop ICT literacy.

The interview results show that managers need to increase ICT literacy skills that support the learning process and management of the CLC program. This includes: (a) in-depth mastery of the increasing and varied applications that support online learning, (b) strengthening shared motivation in guiding citizens to learn remotely, (c) getting government support for adequate Internet facilities, libraries, and ICT laboratories, (d) developing a CLC website, (e) increasing education personnel's ability in managing a network or internet-based institutions, (f) improving ICT-based CLC data management capabilities, and (g) developing online teaching materials.

Discussion

The Covid-19 pandemic has both positive and negative impacts on the CLC managers' performance in terms of managing non-formal educational programs. The results show that the social disaster caused them to be more creative and understand their weaknesses. At the same time, the pandemic has caused various difficulties for this sector, such as declining the quality of education, less effective learning processes, and insufficient funding. Its negative impacts have been widely understood, specifically in this field, as reported by several researches which stated that the pandemic negatively affected the process and quality of education (Gonzalez et al., 2020; Schleicher, 2020; Alghamdi, 2021; OECD, 2020).

However, it also affected several individuals in terms of productivity, resilience, and patience towards disasters and developing solidarity.s

ICT literacy is an instrument adopted by managers to respond and adapt to the positive and negative impacts of Covid-19. It is the ability to access, utilize, evaluate, create, and develop its use in reality, including in the educational sector (Welsh & Wright, 2010; Iinuma, 2016), used to facilitate CLC goals. In the academic aspect, the pandemic affected the usual face-to-face learning. This led to demand for the implementation of online learning (Hart & Alonso, 2021; Hodges et al., 2020; Mohammed et al., 2020). Preliminary researches reported that C package education programs are carried out using various internet-based applications such as e-mail, WA, Google Classroom, Google Meet, and Zoom. Managers realized that the use of ICT facilities is a means to overcome the weaknesses or malfunctions associated with the face-to-face process as the current conditions requires the use of ICT-based learning in accordance with emergency remote education (Pokhrel & Chherti, 2021; Valverde-Berrocoso et al., 2021; OECD, 2020; Al-Naabi & Al-Abri, 2021). They are also aware that ICT has certain advantages, which includes cross-regional learning activities, it is more efficient, changes the teachers' roles, improves students' higher-order thinking skills (HOTS), and facilitates differences in academic styles (Garad et al., 2021; Çevik & Duman, 2017; Kurniawan et al., 2021; Palahicky, 2015;

Da Silva & Behar, 2020). In relating to the management, the ability of managers to be ICT literate is manifested in the use of social media, e-mail, and web or blogs created for the promotion of educational services to the community and consultations, e.g., the local education office. However, they have not optimally developed quality human resources and online learning modules. This is almost similar to the use of ICT in the learning aspect. Managers are aware and try to carry out their tasks using technological advances, thereby ensuring the continuous management of these institutions even during the pandemic. This shows the smooth functioning of their roles and functions, e.g., establishing partnerships, reporting accountability, and evaluating implemented activities. Developing organizational capacity depends on managers' ICT skills.

Its mastery, utilization, and development occur through a learning process carried out both independently and collectively. The results show that the academic approach carried out by managers, although in different forms, led to positive behavioral changes, thereby ensuring effective institutional and learning processes. Meanwhile, it is a way of adapting and surviving during the crisis, and by updating this skill, the CLC does not experience any form of interference in achieving their educational goals (Brooks-Young, 2007; Alazam et al., 2012). However, through the learning process, managers can recognize the problems encountered, understand their strengths and weaknesses, possible solutions, anticipate certain occurrences, and tend to adjust. They are expected to actively formulate experiences gained from the environment and crystallize existing knowledge in the form of meaningful self-authentic awareness (Mezirow, 2000; Kolb, 2015). This is ultimately realized in innovative creations, e.g., academic systems, online teaching materials, learning media, and evaluation (Fullan, 2007; Suryono & Tohani, 2019). Ideally, managers can interpret experiences or knowledge about their failures or success in using ICT to carry out their tasks and construct their understanding of the way and manner it needs to be developed and applied. Apparently, a climate that supports the learning process or knowledge sharing in organizations has to be developed, e.g., an altruistic culture, empowering leadership,

discussion, and dialogue in solving educational problems (Pope & Nicolaides, 2021; Matić et al., 2017; Kyoung Park et al., 2014).

The learning process is a tool that aids individuals to think creatively and innovatively to overcome the problems encountered, thereby enabling them to continue to carry out their functions and roles and make a positive contribution to the environment. Learning behavior is successfully realized assuming managers are skilled and possess readiness and self-efficacy, including the commitment to developing their ICT literacy abilities (Perdew, 2018; Hindun et al., 2021; Rutherford et al., 2021; Michael et al., 2017).

Its mastery in educational management needs to be accelerated and designed orderly using developmental procedures based on the actual needs of motivating CLC managers to embrace this skill. This means that the need to boost ICT literacy has to be understood objectively to identify opportunities to empower managers or organizational practices (Stefaniak, 2021). Empirically, it is possible to develop this skill in a professional manner. Related to the results, most managers desire to improve their abilities in the use of ICT for learning, marketing, formulation of teaching materials, etc. Based on this need, the development of this competence is realized through innovative educational activities, based on awareness and their ability to get involved. They also need to ensure that they implement all that has been learned to actualize their roles and functions in the management of CLC institutions, thereby improving their performance.

The development of ICT literacy for managers needs to be accelerated to aid CLC to become a competitive non-formal educational institution capable of adapting to adapt caused by disasters. This is realized by implementing educational actions based on participatory principles, experiences, and ICT use. It is carried out by organizing training sessions and development in the form of experience-based blended learning. Previous researches showed the possibility of using blended to assist students with diverse characteristics, synergize various methods and learning designs (Jones & Sharma, 2021; Nilson & Goodson, 2021; Bosch et al., 2021). The implementation of blended learning needs to be supported by the availability and functioning of ICT for

academic management systems and other applicable and effective online modes that cause managers to be motivated to learn. In addition, to ensure the achievement of learning objectives, this model needs to be integrated and oriented with managers' daily work or main tasks. The learning conducted by managers allows them to remain active and strive for valuable experiences. This involves adopting the project learning method, and the outcomes are applied directly in their routine tasks, thereby ensuring that their real benefits are immediately felt by both themselves and the CLC institution.

This educational activity has to be carried out in accordance with managers' conditions relating to the various problems encountered and experiences. Therefore, online learning needs to be based on objective requirements and a realistic understanding of the target group, which motivates them to research independently, in a comfortable environment (Squire, 2021; Rahm et al., 2021; Sutarni et al., 2021; Islam, et al., 2021; Calamlam et al., 2021; Means & Neisler, 2021; Omodan & Ige, 2021). Besides, the implementation of learning to improve ICT literacy requires supportive facilities from various related parties, such as adequate and fair funding, internet services (equity), and policies that aid the implementation of e-learning (Egielewa et al., 2021; Islam et al., 2021; Rodríguez et al., 2021; Khlaif et al., 2021).

Conclusion

The Covid-19 pandemic has both positive and negative impacts on the CLC managers' performance, thereby forcing them to adapt to new and difficult conditions. The ability to adapt to these desired and undesired conditions is an instrument that needs to be possessed and developed by managers. One of such conditions is mastering ICT that supports the smooth management and learning process carried out by CLC. This skill is an important attribute required to achieve educational goals needed to serve and empower the citizens. Managers can master this skill by using various ICT-based devices or applications intended for the implementation of the learning process and CLC management. Furthermore, its mastery is carried out by conducting learning processes

that benefit managers both independently and collectively to support the effectiveness of non-formal education management. Improving ICT literacy is an important effort that is an continuing process based on managers' objectives, realized by integrating an advanced approach in implementing their roles and functions in managing CLC to guarantee a major impact for the students and the institutions.

Implications

The development of ICT literacy skills for CLC managers is required to meet the appropriate educational services. Therefore, they can develop nonformal education management activities in higher quality. Thus, future research is implemented to improve these abilities through learning according to their characteristics such as by developing ICT-based learning and experiences, providing ICT literacy development teaching materials which are accessed online, and also developing learning spirit of the managers.

Limitations

The limitations of this study are that the respondents did not represent all CLC managers throughout Indonesia. Moreover, the instruments submitted to the respondents were not collected quickly based on the due time.

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