Volume-4, Issue-3, March-2020: 42-55 P-ISSN: 2659-1561
International Journal of Recent Innovations in Academic Research E-ISSN: 2635-3040

Research Article

Assessment of ICT Facilities for Industrial Technology Program

Apolinar B. Dimaala

College of Industrial Technology, Batangas State University, Philippines

Received: Mar 16, 2020 **Accepted:** Mar 23, 2020 **Published:** Mar 28, 2020

Abstract: Appropriate instructional materials and facilities are the possible factors that affect the interest and consequently the achievement of students in any field of study. The 21st century's new perspectives on teaching and learning are now necessary to open a new window for thinking about how skills and standards impact these traditional teaching roles. The goal is to make these roles relevant to today's ICT evolving learning needs. Teachers are expected to process and evaluate new knowledge relevant to their core professional practice and to regularly update their profession's knowledge base. This paper determines the ICT-based services used for the Industrial Technology program in one of the State Universities and Colleges in the Philippines. The study shows that the respondents agreed on the provisions on ICT facilities for the CIT-related courses in terms of computer units, users' schedule and availability of room space; and the ICT-based services rendered by the ICT laboratories in terms of browsing and researching, the printing of documents, and internet access/connectivity is of least extent. It was also found out that the major causes and sources of difficulties that students encountered in the access and use of ICT-based services were the scheduled time in ICT laboratory and the availability of computer units.
Keywords: ICT facilities, ICT-based services, teaching and learning, industrial technology.

Introduction

Quality education is a global concern in virtually all societies. To achieve it, efficient and quality teaching needs to be employed. However, this may not occur without the use and integration of Information and Communication Technology (ICT). Instructional technologies play a vital role in the teaching and learning process and have proved to have several inherent advantages when well utilized. ICT refers to information-handling tools that are used to generate, store, process, distribute and share information. The use of ICT in education is obviously not a new rally for the protection and promotion of life. There are many pieces of evidences that the use of ICT in education provides positive pedagogical, social and economic benefits. Computers have made the world a global village today. These are clear pictures of proof that computers really are part in the day-to-day lives of many people. For the essence of success, nowadays schools or institutions and learning centers offer both basic and advanced training courses in computer education. This is now made part of the curriculum mainly in business, science, engineering and technology programs. Continuous learning is essential in this evolving world of technology. This indicates a challenge to the expertise of teachers or instructors to rise beyond the use of technology, computer software, facilities and equipment resulting in an effective learning experience with the use of advance technology. The rapid technological advancements in computer entail a great change of lives for better development. The use of computers is influential in modern life we live in. Computers are everywhere; at home, at school, and at work. They are the primary means of communication for billions of people. It must be borne in mind, however, that in the use of modern teaching devices and equipment, the teacher has not become dispensable.

Technology by itself cannot teach by itself, the appropriateness of computer software still depends on the teacher who will use it and who will still have to exercise his sound judgment as to what form of educational technology suits his means.

The use of ICT, particularly computers improves both teaching and achievement. To make tomorrows' workforce competitive in an increasingly high-tech world learning computer skills must be a priority. Work with computer software particularly using the Internet brings students valuable connections with teachers other schools and students, and a wide network of professionals around the globe. Those connections spice the school day with a sense of real-world relevance and broaden the educational community. Technology has turned out to be a necessity more than a luxury in the schools. Schools are built according to the technological needs and equipped with the necessary network for internet access. Now computer hardware is many schools is completed yet the developing process of the required educational software is still being carried out. The cost of new computers is enough for most of the schools to be covered.

Computers and information technologies are rapidly developing and children are growing up with technology. Both educators and students need to be competent and knowledgeable about computers and computer software. However, the discussions about the limits of computers and computer software are still continuing. In most schools, computers are only used only for Internet access and encoding. Teachers have been the agent between the learner and technology, and play a critical role in the success of teaching and learning. Therefore, the teachers should stay abreast of changing technology in order to produce good workers in this complicated business world. Nowadays, computer software affects the way education is delivered for preparing workers.

In the Philippines, computer education is a must in both public and private institutions. Lessons are delivered using different applications offered by modern technology. Teachers as facilitators of learning need to equip themselves with the skills and the knowledge to cope up with the fast-changing world of technology. They have to keep themselves abreast with the latest trends in computer. As such, teachers need to participate and attend seminars and workshops that will give them the opportunity to improve their skills in using computers (Caraig, 2017). They must also adapt themselves with ICT-Based instructions to impart the lessons to the students very well. In Batangas State University-Malvar Campus, ICT based instruction is also given attention, especially among Industrial Technology students. The integration of ICT was restricted to the basic level and demonstrative purposes and they underused simulated tasks for experience, discovery, and experiment.

It is in this premise that the researcher decided to conduct this study in order to determine the ICT based services used for the Industrial Technology related courses of Batangas State University, Malvar Campus and be able to propose an enhancement program for its improvement.

Brief Review of Literature

In order to establish a strong justification and substantiate this study, readings on several studies related to ICT based services in schools and integration in the teaching-learning process were reviewed and hereby presented. Bonifacio (2013), in her study, mentioned that researches have indicated that the use of ICT can support new instructional approaches and make hard-to-implement instructional methods such as simulation or cooperative learning more feasible. Moreover, educators commonly agree that ICT has the potential to improve

student learning outcomes and effectiveness. Integration has a sense of completeness or wholeness, by which all essential elements of a system are seamlessly combined together to make a whole.

In the study conducted by Kwek (2011), it was emphasized that in order to meet 21st century expectations, educators, therefore, need to depart from the ideas and pedagogies of yesterday and become bold advocates to develop the sorts of learning dispositions needed for our learners and their work futures. This means spending less time explaining through instruction and investing more time in experimental and error-tolerant modes of engagement. Ramos (2016) added that the twenty-first-century pedagogy must employ ICT and research-supported teaching strategies, learning technologies and real-world applications. In particular, competency-based learning combined with innovative learning methods that make use of technologies, and inquiry and problem-based approaches, will help learners to develop 'higher-order thinking skills.

Kline (2011) stressed that twenty-first century education must place greater emphasis on ICT, instructional design, team building, facilitating learning and new ways to foster creativity and innovation. ICTs must be integrated into teacher and student education programs and become commonplace as a tool used throughout teaching careers. He also asserted that in the information technology age it seems as if the role of teachers has grown immensely; they are now expected to be tech-savvy, computer literate and at the cutting edge of education.

The study of Marcial and de la Rama (2015) presented the landscape of ICT competency of faculty in the teacher education institutions in the central region of the Philippines. It was concluded that there is a slight technology infusion into the teaching instruction among teacher educators in Region 7. According to the researchers, there is a need to improve the level of competency among teacher educators, particularly skills in using complex and pervasive ICT tools to achieve innovative teaching and learning.

Another study that was conducted by Kopch (2016) determined faculty perceptions about innovation in teaching, and technology in a college of education in a research-intensive university. Results showed that teachers value the technology's role in teaching, though in different, nuanced ways, there were also some who were cautious and sceptical of using technology for teaching.

According to Leung (2015) in his study, the poor infrastructure, lack of space and equipment and resources became major barriers preventing teachers from using ICT in teaching effectively. Aside from these, he mentioned other hindering factors like class size and classroom settings and parents' inability to provide their children with a home computer and the needed software. A study to find out the barriers that the principals perceived with regard to ICT integration in the classroom were conducted by Tondeur *et al.,* (2008). The findings revealed that lack of access to resources; insufficient infrastructures and limited skills level of the teachers are the three topmost barriers that hinder the ICT integration in the classrooms. In this regard, he mentioned that it is the responsibility of the national authorities to tackle and meet these needs.

Cox (2011), on the other hand, undertook research and then concluded that ICT had indeed had a positive effect on attainment in National Curriculum subject areas. They qualified this assertion by stating that it was not just the everyday use of ICT as a tool, but also the skilful use of ICT by the teacher when linked to careful pedagogical strategies enhancing classroom

communication. In order to get the best use of ICT, teachers have to be aware of ICT's range and feature as a resource and should be deeply versed in ICT techniques. Further, he mentioned that using ICT effectively could lead to a more positive educational ethos in the classroom and in effect a more communicative classroom. Effective use of ICT by the teacher can offer greater interactivity at both a deep and surface level.

In 2011, Morissa conducted a study to assess the extent to which the use of ICT affects the teachers' teaching practice. In his study, he concluded that teachers believed that there is a positive relationship between the use of ICT and its applications and the nature of their teaching methods. He also tried to find out the difficulties that teachers encountered while integrating ICT in their classes. According to him, these difficulties include the teachers' weakness in knowledge about what technologies are available and how these can be used in the educational process in the classroom. In this regard, he recommended that teachers should be given enough training to know how to use ICT in relevant ways to help them in the delivery of the curriculum.

Sparks and Loucks-Horsley (1989) in his study claimed that training is a cost-effective means for the teachers of the whole school to acquire knowledge and skills in the use of ICT in the classroom. Further, he said that school-based is the most preferable way because participants take part in determining objectives and have opportunities to get involved in planning the content.

On the other hand, Rodrigo (2011) in her study revealed that teacher preparation on the use of a specific software packages is insufficient. Some teacher training programs emphasize the use of specific software packages but overlook the integration of ICT in the curriculum.

Research Questions

The researcher aimed to assess the ICT-based services for the College of Industrial Technology related courses of Batangas State University JPLPC Malvar Campus.

Specifically, this study sought to answer the following questions:
1. How do the respondents assess ICT facilities for the CIT related courses in terms of:
1.1 computer units;
1.2 user's schedule; and
1.3 availability of space?
2. What is the extent of ICT-based services rendered by the ICT laboratories in relation to:
2.1 browsing and researching;
2.2 printing of documents; and
2.3 internet access or connectivity?
3. What are the sources and causes of difficulties encounter or experienced by respondents in the access or use of ICT-based services?
4. What plan of action may be proposed to address the problem?

Scope and Limitation

This study focused on the assessment of the ICT-based services for the industrial technology program of the Batangas State University JPLPC Campus. It determined the assessment of the students regarding the effectiveness of ICT-based services in terms of computer units, the user's schedule, and the availability of room space. The extent of services of the ICT laboratories in relation to browsing, the printing of documents, security, Internet access, and other services were also covered in the study. Likewise, problems encountered by the users

were looked into this study. The output of the study pertains to the proposed action to address the problems encountered by the clientele.

The subjects of the study were the students from the College of Industrial Technology who was chosen, using random sampling. The study utilized the descriptive research design, with the questionnaire as the main gathering instrument. This study did not include the use of CISCO Laboratory.

Significance of the Study

The researcher believes that the results of this study will give due benefits to the following: to the ICT coordinators and administrators of the university, **t**he result of the study may provide the baseline data and information. This may form a basis of curricular enrichment and formulation of policies on improvement on delivery of computer subject instruction.

To curriculum planners, this study will help them in devising the curriculum and prepare the proper and important topics to be given to the students, they will be able to make some adjustments in the ICT-based services given to all kinds of learners.

To teachers, **t**hey may use the findings to identify the capacity of each student when it comes to learning. In addition, the teachers will be able to understand the interests of each student in ICT-based services. This study will be beneficial for students since they will know the difficulties they encountered in the computer software or computer subject so and would, therefore avoid failing grades.

To future researchers: They may use the result of this study as a reference for future research because the education system is continuously changing. They may identify other approaches unused in this study and use this as a basis in their research.

Methodology

Research Design

This study determined the assessment of ICT facilities for the CIT related courses and the extent of ICT-based services provided at Batangas State University JPLC Malvar Campus which would be used as a basis for the proposed measures and actions for a more enhanced and effective provision of services. In view of the nature of the study, the researcher considered the descriptive research method. According to Leary (2012), a descriptive research method describes the behavior of a particular group of individuals and focuses on the present condition. It uses a survey questionnaires and personal interviews to provide adequate and accurate interpretation and analysis of findings affecting the current status of the subject under investigation. It involves the collection of data as an attempt to examine situations in order to establish the norm and to predict what will happen under some circumstances.

Subjects of the Study

The respondents of the study were the 90 students from the department of College of Industrial Technology at Batangas State University JPLPC Malvar Campus who were using the ICT laboratory. Slovin's formula at a five percent margin of error was applied to determine the specific number of respondents.

Table 1 shows the sampling of respondents obtained by proportionate allocation applying the formula.

Table 1. Distribution of Respondents from the College of Industrial Technology

Course	Population	Sample
Mechanical Technology	81	21
Civil Technology	53	14
Computer Technology	119	30
Electrical Technology	99	25
Total	**352**	**90**

Data Gathering Instrument

To gather the needed data in conducting this research, a self-constructed questionnaire was used as the primary tool.

Construction: The self-made questionnaire was developed based on the statement of the problem, personal experiences and observation of the researcher and from readings of similar studies and concepts that were taken from related studies of other researchers.

The questionnaire was composed of three parts. Part I dealt with the assessment of the respondents on the ICT facilities for the CIT in terms of computer units, users' schedule and availability of room space. The second part focused on the extent of ICT-based services rendered by the ICT laboratories in terms of browsing and researching, the printing of documents and internet connectivity and access. The last part of the questionnaire dealt with the sources and causes of the problems and difficulties that respondents encounter or experience on the use and access to ICT-based services. The first draft of the questionnaire will be presented to some ICT teachers, for suggestions, after which the recommendations will be incorporated prior to validation.

Validation: To ensure the validity of the constructed questionnaire, the researcher read several research studies and thesis for references, then it was presented to the researcher's adviser. As the draft questionnaire was approved, the researcher requested the assistance of experts and practitioners in the field, for content validation, modification, and enrichment to make it suited to the target respondents. All the comments and suggestions were incorporated in the final draft of the questionnaire.

Administration: After the validation of the questionnaire, the researcher requested for the approval of the Dean of the College of Industrial Technology of BatStateU-Malvar for the distribution of the questionnaire among the students. When the researcher received the approval of the school head, the copies of the questionnaire were distributed among the respondents. The researcher himself personally retrieved the questionnaires. The data were tallied and given the appropriate statistical technique.

Scoring: A four-point scale was used as options for the responses. The verbal interpretation of the options and the mean ranges are given as follows:

Option	Score	Verbal Interpretation	
4	3.25 – 4.00	Strongly Agree (SA)	Very Great Extent (VGE)
3	2.50 – 3.24	Agree (A)	Great Extent (GE)
2	1.75 – 2.49	Disagree (DA)	Some Extent (SE)
1	1.00 – 1.74	Strongly Disagree (SD)	Least Extent (LE)

Data Gathering Procedure

In gathering the pertinent data for this study, the researcher sought the permission of the College Dean and the respective instructors and professors to administer the questionnaires. In the same manner, the researcher also sought the permission of the students.

The researcher also explained to them the purpose of conducting the research and assured them the confidentiality of their responses. After the distribution of the questionnaires, the retrieved responses were scored, tallied and subjected to statistical treatment with the help and assistance of a professional statistician.

Data Analysis Plan

Responses from the questionnaires were tallied and treated with the appropriate statistical treatment of data. In order to make the analysis and interpretation of data more reliable, the statistical tools applied in the study were frequency and percentage, ranking and weighted mean.

Results and Discussion

The assessment of the ICT facilities for the College of Industrial Technology related courses at the Batangas State University JPLPC Malvar Campus in terms of computer units, users' schedules, and room space available were studied. The data are reflected in the following tables.

Table 2. Assessment of Students on the ICT Facilities in terms of Computer Units

Computer Units	Weighted Mean	Verbal Interpretation	Rank
1. Adequate number of computer units	2.38	DA	1
2. Upgraded computer units	2.29	DA	3
3. Functional computer units	2.35	DA	2
Composite Mean	**2.34**	**DA**	
Legend: SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree			

Table 2 presents the assessment of respondents; on the ICT facilities for the CIT related courses in terms of computer units.

As reflected in the table, the respondents disagreed that there were the adequate number of computer units in the ICT laboratory as shown by the weighted mean of 2.38 and with a rank of 1. There were times that students went to the ICT laboratories for computer-related works but cannot perform the said tasks because almost all of the computers were used by other students. This means that the schools need to add more units of computers in the ICT laboratory to accommodate all the students.

The respondents also disagreed that the computer units in the ICT laboratory are functional. This ranked second among the list and got a weighted mean of 2.35. This implied that respondents encounter difficulties because some of the computers are malfunctioning.

Last in the rank with a weighted mean of 2.29 in the option in terms of the upgraded computer units, respondents disagreed that the computers available in the ICT laboratory were all upgraded. Still, there were units of computers that were old models that need to be changed for easy and fastest access for data transfer.

These were affirmed with the findings of Leung (2015) who stated that poor infrastructure, lack of space and equipment and resources became major barriers preventing teachers from using ICT in teaching effectively.

The composite mean of 2.34 indicates that the student- respondents find out that the college needs to have additional computers and be upgraded to produce more functional computers. Table 3 presents the assessment of respondents on the ICT facilities for the CIT related courses in terms of the users' schedule.

Table 3. Assessment of Students of the ICT Facilities in terms of the Users' Schedule

Users' Schedule	Weighted Mean	Verbal Interpretation	Rank
1. Adapted to free hours of the students	2.99	A	1
2. With a wide range of schedule time	2.95	A	2
3. Included schedule on Saturday	2.60	A	3
4. included schedule on legal holidays	2.44	D	4
Composite Mean	**2.75**	**A**	
Legend: SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree			

It can be gleaned from the table that the respondents assessed that adapted to free hours of students, got a weighted mean of 2.99 with a verbal interpretation of agree with which ranked first. It means that the student-respondents were allowed to use the ICT laboratory during their free hours. The respondents assessed that a wide range of schedule time as other options got a weighted mean of 2.95 with a verbal interpretation of agree which rank second. It implied that the ICT laboratory observes time allotment for each user.

The weighted mean of 2.60 proved that the ICT laboratory of BatStateU-Malvar is available even on weekends and verbally interpreted as agree. It indicates that students were allowed to use the ICT laboratory even on weekends. Last in rank is the schedule during legal holidays, which got the lowest weighted mean of 2.44. It simply means that it is acceptable and reasonable that there should have no schedule during legal holidays.

The composite mean of 2.75 tells that the student-respondents find out that in terms of users' schedules on the ICT facilities need to be maintained and assure the users regarding the schedule given.

This confirmed with Van Keer (2010) findings revealed that lack of access to resources; insufficient infrastructures and limited skills level of the teachers are the three topmost barriers that hinder ICT integration in the classrooms. In this regard, he mentioned that it is the responsibility of the national authorities to tackle and meet these needs.

Table 4 presents the assessment of respondents on the ICT facilities for the CIT related courses in terms of room space. As shown in Table 4, respondents strongly agreed that the ICT facilities were both well-lighted and properly ventilated. Both items got a weighted mean of 3.89 and ranked 1.5. Proper ventilation is provided in the laboratory to maintain the good working conditions of the machines or computers and to make the users feel more comfortable while doing research and other computer-related tasks. In the same manner, enough lighting is also provided in the laboratory so that users can easily perform the task they are doing on the computers.

Table 4. Assessment of Students on the ICT Facilities in terms of Available Room Space

Room Space	Weighted Mean	Verbal Interpretation	Rank
1. Adequate space for the users	2.49	DA	3
2. Properly ventilated	3.89	SA	1.5
3. Well-lighted	3.89	SA	1.5
4. Conforms with the standard ICT Laboratory	2.34	DA	4
Composite Mean	**3.15**	**A**	
Legend: SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree			

The student-respondents assessed the adequacy of space for the users with a weighted mean of 2.49 and rank 3. It means that students disagree that the ICT laboratory had adequate space for the users because it cannot accommodate a large number of users during their laboratory.

Last in rank was the laboratory to conform to the ICT laboratory standard with a weighted mean of 2.34. This only means that there was some more provisions for ICT laboratories that are not provided in the ICT facilities for the CIT related courses at BSU Malvar Campus.

The composite mean of 3.15 implied that the respondents proved that the room space of the ICT laboratory though provides and meets the needs of the user, but still needs improvement to accommodate all the students who will use computers in the ICT room.

As the ideas of Kline (2011) equalled the findings of this study stressing that twenty-first-century education must place greater emphasis on ICT, instructional design, team-building, facilitating learning and new ways to foster creativity and innovation. ICT's must be integrated into teacher and student education programs and become commonplace as a tool used throughout teaching careers.

Table 5. The Extent of the Services of ICT Laboratory in Relation to Browsing/ Researching

Browsing/Researching	Weighted Mean	Verbal Interpretation	Rank
1. Organizing of files	3.50	VGE	2
2. Sorting of files	2.44	SE	4
3. Limited surfing / prohibited website	2.50	GE	3
4. All educational websites are available	3.54	VGE	1
Composite Mean	**3.00**	**GE**	
Legend: VGE-Very Great Extent; GE-Great Extent; SE-Some Extent; LE-Least Extent			

Table 5 shows the extent of ICT- based services in relation to browsing/researching. The table shows that the availability of educational websites for browsing got the highest rank with the weighted mean of 3.54. It implied that Internet services have a great help among the students of the College of Industrial Technology in the university. The respondents also revealed that organizing of files ranked second with a weighted mean of 3.50, assessed to be a very great extent. This shows that the files saved in the computer units were well organized, thus easy to find when searching for them.

In addition, the respondents assessed the sorting of files as to some extent has a weighted mean of 2.44, which is rank 4. It implied that there is still a need to improve the functionality of the computer units for easy and quick transferring of data.

Relative to limited surfing and browsing on the prohibited website, the respondents assessed the item as great extent with a weighted mean of 2.50 and rank 3, this only means that the ICT laboratory imposed a strict policy on surfing the internet when it comes to websites which are not sources of their requirements in school.

The study of Sparks and Loucks-Horsley (1989) has a relationship in the present study since he claimed that training is a cost-effective means for the teachers of the whole school to acquire knowledge and skills in the use of ICT in the classroom. Furthermore, he said that school-based is the most preferable way because participants take part in determining objectives and have opportunities to get involved in planning the content.

Table 6. The Extent of the Services of ICT Laboratory in Relation to Printing of Documents

Printing of Documents	Weighted Mean	Verbal Interpretation	Rank
1. It is accessible to an easy way of printing	2.38	SE	3
2. It has the lowest price in printing per page	2.46	SE	1.5
3. It provides assistance for printing document	2.36	SE	4
4. It has a variety of printer to choose with	2.46	SE	1.5
Composite Mean	**2.42**	**SE**	
Legend: VGE-Very Great Extent; GE-Great Extent; SE-Some Extent; LE-Least Extent			

Table 6 shows the extent of ICT- based services in relation to the printing of documents. As shown in the table, students assessed that the services of the ICT laboratory when it comes to the printing of page at the lowest price and there is a variety of printers to choose for some printing task, has a verbal interpretation to some extent. Both items ranked 1.5 with a weighted mean of 2.46. This means that the service of printing in a lower cost should be accessible and be maintained. It also implied that a variety of printers should be made available to suit the needs of the students.

It can also be gleaned from the students' assessment that an easy way of printing has a verbal interpretation to some extent, which ranked third with a weighted mean of 2.38. This only means that the service of printing should be improved.

The extent of assistance for printing documents got the weighted mean of 2.36. It indicated that the users were not properly assisted in printing certain documents.

The composite mean of 2.42 relative to the extent of printing services is interpreted as to some extent. It means that ICT when it comes to printing services, do not meet the satisfaction of the clients. Thus this must be given attention by the concerned person for better services.

Table 7. The Extent of the Services of ICT Laboratory in Relation to Internet Access and Connectivity

Internet Access	Weighted Mean	Verbal Interpretation	Rank
1. It has an easy and quick connection.	2.48	LE	1
2. It is easy to connect with other sites	2.39	LE	2
3. It has a complicated connection with the net	2.24	LE	3
Composite Mean	2.37	LE	
Legend: VGE-Very Great Extent; GE-Great Extent; SE-Some Extent; LE-Least Extent			

Table 7 presented the extent of ICT-based services in terms of Internet access and connectivity as assessed by the respondents.

The respondents assessed ICT-based services in terms of Internet access and connectivity as the least extent, which has a weighted mean of 2.48. This means that the Internet connection in the laboratory is still weak and it cannot supply the needs of the students. This also showed that fastest Internet access must be provided.

It was shown in the table that the accessibility of the ICT laboratory to other sites was assessed by the respondents with a weighted mean of 2.39, in the least extent. It indicated that there were sites that are needed to be provided for the benefit of the users. Since the Internet connection cannot be accessed at once failure to connect to other sites also occurred.

In addition, with regard to complicated connection with the net as evaluated by the respondents ranked third with a weighted mean of 2.24 among the variables. This implied that the ICT laboratory should have proper assistance when the problem arises.

As the study relates with the findings of Ramos (2015) who added that the twenty-first-century pedagogy must employ ICT and research-supported teaching strategies, learning technologies and real-world applications. In particular, competency-based learning combined with innovative learning methods that make use of technologies, and inquiry and problem-based approaches, will help learners to develop 'higher-order thinking skills.

Major Causes of Difficulties Encountered by the Students

Table 8 showed the major causes of difficulties experienced by the students regarding the ICT-based services. The composite mean of 3.64 and verbal interpretation of agreeing proved that they really have encountered such difficulties.

Table 8. Causes of Difficulties Encountered by the Students Regarding ICT-Based Services

Indicators	Weighted Mean	Verbal Interpretation	Rank
1. Support from the administrators	2.67	A	4
2. Support from parents	2.89	A	3
3. Availability of Computers	3.17	A	2
4. Scheduled Time in ICT Laboratory	3.20	A	1
Composite Mean	**2.98**	**A**	
Legend: SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree			

In the first rank was the time of laboratory schedule, with a weighted mean of 3.20. There were times when the students' schedule fell in the mid-afternoon where the Internet connection is oftentimes weak. This resulted in the difficulty in doing what is being asked to them to do. Following closely with a weighted mean of 3.17 and verbally interpreted as agree was the availability of computers. They have experienced using a few units of a computer at the same time. This was resulted to the slow production of outputs.

In the third rank was the support from parents. This was justified by the weighted mean of 2.89 and with a verbal interpretation of agree. If parents would not support their children, then the studies of the students will be much affected. They should be able to get support from them. Lastly, one of the causes of students' difficulty in the access to ICT-based services was the support from the administrators. The administrators must see to it that all the needs of the students are answered in order to produce quality graduates.

These findings conformed to the study conducted by Kwek (2011) which emphasized that in order to meet 21st-century expectations, educators, therefore, need to depart from the ideas and pedagogies of yesterday and become bold advocates to develop the sorts of learning dispositions needed for our learners and their work futures. This means spending less time explaining through instruction and investing more time in experimental and error-tolerant modes of engagement.

Table 9 presented the action plan that could be utilized to address the problem in the use of ICT Based services in BSU-Malvar. The teacher-researcher offered strategies and activities that will help solve the difficulties encountered by the students in using ICT- Based services on the campus.

Service integration and collaborative care from parents and other stakeholders to solicit their support can be best done at the beginning of the school year to achieve their full support. Achieving this would mean that the parents would really become part of the education of their children.

Another strategy to address the problem is through the conduct of brainstorming among faculty and administration to come up with the best schedule of laboratory services so that the students will be given equal opportunities. By doing such students would be given ample time to do the task assigned to them concerning laboratory activities.

Table 9. Action plan

Objectives	Strategies/ Activities	Key Player	Time Frame	Performance
Arrange laboratory schedule properly	Conduct Brainstorming session to provide and make the best schedule in the laboratory	Administrators Key Professors	Beginning of the school year	Well-planned schedule is prepared.
Capacity/ Capability Building Workshop for ICT Teachers	Workshop To Enhance ICT Teachers' capacity and capability	Teachers	Beginning of the School Year	Capacitated ICT teachers are produced.

Lastly, workshops to enhance the capability and capacity of ICT teachers should be done to ensure that they would be capacitated to handle the ICT subjects given to them. It should be the priority of the administration.

Conclusion and Recommendations

Based on the findings revealed in the study, the following conclusions were drawn: the respondents agreed on the provisions on ICT facilities for the CIT-related courses in terms of computer units, users' schedule and availability of room space; the ICT-based services rendered by the ICT laboratories in terms of browsing and researching, the printing of documents, and internet access/connectivity is of least extent; the major causes and sources of difficulties that students encountered in the access and use of the ICT-based services, were the scheduled time in ICT laboratory and the availability of computer units; arranging the schedule for the use of ICT laboratories and soliciting the full support of the administrators and tapping the stakeholders to procure enough number of computer units highlighted the proposed activities or measures to address the problem.

The proposed plan of activities to address the problem may be referred to as the person in authority and officials for their assistance and suggestions. Administrators may give focus and attention on the improvement of the ICT facilities for the CIT-related courses; ICT-based services may be improved for academic and better performance of the students; a similar study may be conducted to other colleges and departments, institutions and agencies to validate findings.

Conflict of interest

The author declares no conflict of interest.

References

1. Bonifacio, A.L. 2013. Developing Information Communication Technology (ICT) Curriculum Standards for K-12 Schools in the Philippines. University of the Philippines, Diliman, Quezon City.
2. Caraig, G. 2017. Design, Development and Evaluation of PINOY SCOWTS: Philippine Seminars, Conferences, Workshops and Training Site. Asia Pacific Journal of Multidisciplinary Research, 5(3): 118-129.
3. Cox, M.J. 2011. The effects of information technology on student's motivation, London, UK: King's College, London, Final Report.
4. Cradler, J. 2012. Researchers on the Effects of Technology in Teaching and Learning, West Ed. 2002 www.WestEd.org
5. Kline, Stephen, 2011. Digital Play: The Interaction of Technology, Culture, and Marketing. McGill–Queen's University Press.
6. Kopcha, T.J., Rieber, L.P. and Walker, B.B. 2016. Understanding university faculty perceptions about innovation in teaching and technology. British Journal of Educational Technology, 47(5): 945-957.
7. Kwek, S.H. 2011. Innovation in the classroom: Design thinking for 21st century learning. Retrieved from http://www.stanford.edu/group/redlab/cgibin/publications_resources.php
8. Leary, M.R. 2012. Introduction to Behavioral Research Methods. 6th Edition, New Jersey: Pearson.

9. Leung, Kin Ping. 2013. Enhancing Teachers' Incorporation of ICT in Classroom Teaching. University of Hongkong.

10. Marcial, D.E. and Rama, P.A. 2015. ICT competency level of teacher education professionals in the Central Visayas Region, Philippines. Asia Pacific Journal of Multidisciplinary Research, 3(5), 28-38.

11. Morris, D. 2010. Are teachers technophobes? Investigating professional competency in the use of ICT to support teaching and learning. Procedia-Social and Behavioral Sciences, 2(2): 4010-4015.

12. Ramos, A.C. 2015. Methods and teaching strategies used by teacher education faculty members in one state university in the Philippines. Asia Pacific Journal of Multidisciplinary Research, 3(5): 36-44.

13. Rodrigo, M.T. 2011. Information and Communication Technology Use in Philippine Public and Private Schools. Ateneo de Manila University, Quezon City, Philippines.

14. Sparks, D. and Loucks-Horsley, S. 1989. Five models of staff development. Journal of Staff Development, 10(4): 40-57.

15. Tondeur, J., Van Keer, H., Van Braak, J. and Valcke, M. 2008. ICT integration in the classroom: Challenging the potential of a school policy. Computers and Education, 51(1): 212-223.

Citation: Apolinar B. Dimaala. 2020. Assessment of ICT Facilities for Industrial Technology Program. International Journal of Recent Innovations in Academic Research, 4(3): 42-55.