Puissant (ISSN print: 2719-0153; ISSN online: 2719-0161)
Vol. 4, pp. 928-938
https://puissant.stepacademic.net

**Short Paper**

# Analysis of College of Information and Communications Technology Extension Services Effectiveness on G-Suite Webinars

Rosemarie M. Bautista
College of Information and Communications Technology, Bulacan State University, Philippines
rosemarie.bautista@bulsu.edu.ph

*Date received*: May 17, 2022
*Date received in revised form*: August 3, 2022
*Date accepted*: August 3, 2022

Recommended citation:

Bautista, R. M. (2023). Analysis of College of Information and Communications Technology extension services effectiveness on G-Suite webinars. *Puissant*, 4, 928-938.

**Abstract**

This study evaluates the G-Suite webinar's impact on participants' skills and personalities. The study utilized the respondents' answers in the Google form sent by the extension committee to the provided email addresses of the participants in the second quarter of 2021. The researcher performed descriptive analytics that describe the demographic attributes of those who participated in the webinar and respondents in the administered questionnaire. The Paired sample t-test was used to compare the respondents' improvement in terms of their attitude, confidence, and goal orientation toward online classes before and after participating in the webinar training. The result showed a mean difference of 2.42 in respondents' attitudes, 2.56 in respondents' confidence, and 2.10 in respondents' goal orientation toward online classes before and after the webinar. In addition, a p-value of 0.001 was obtained for all the criteria mentioned earlier, which indicates that the obtained mean difference is real and statistically significant. The study also utilized qualitative content analysis to determine the tangible effects of the training on the respondents. Improved teaching strategies and opportunities to help co-workers or colleagues are among the top answers provided by the respondents. In general, the webinars conducted do not only benefit the educators; the indirect beneficiaries of the training are their students and colleagues.

*Keywords* – t-test, descriptive analytics, webinar, impact analysis, extension services

## INTRODUCTION

The entire world has faced a significant challenge since the advent of a disease known as novel coronavirus disease (COVID-19) in the last quarter of 2019. It is considered the most catastrophic pandemic to hit most nations across the globe. The pandemic led to the closure of schools in over 150 countries and affected more than a billion learners worldwide (Sahu, 2020; Tria, 2020). It also caused unprecedented challenges for teachers forced to adopt online teaching (König et al., 2020) and for learners who needed to survive in the new classroom setup (Flores & Swennen, 2020).

The COVID-19 pandemic also created great devastation in education and disrupted how teaching and learning are administered in schools and universities in the Philippines and the entire world. The pandemic created a significant challenge not only for learners but also for many educators in our nation. Despite this, education should continue, and teachers need to be resilient as they continue to bring the light of hope to learners.

While the primary functions of higher education institutions (HEIs) such as Bulacan State University have traditionally revolved around teaching and training, research, and innovation, the third notable role of HEI is in community development. Community engagement has become a crucial component of each HEI mission in every part of the world. Improving the quality of life and uplifting various aspects of the surrounding community become part of HEI's existence. Through the years, HEIs have become a channel for individual and social revitalization (Magsaysay, 2010). Thus, academic institutions are gradually becoming catalysts of change, innovations, and passageways of knowledge and technology transfer.

Community engagement in higher education involves collaborations and partnerships in different sustainable activities, either formal or informal, between higher education institutions and communities at local, national, regional, and international levels (Jacob et al., 2015). Such activities include but are not limited to conferences, research projects, seminars, training, and webinars that are very much in demand in our current situation.

The Republic Act No. 8292, or the "Higher Education Modernization Act of 1997," of the Philippines directed state universities and colleges (SUCs) to strengthen research and extension services by establishing centers. Thus, members of higher academic institutions are expected to excel in instruction delivery and extend service to the community during difficult times.

The abrupt shift from the traditional face-to-face classroom setup to online classes posed a blatant challenge to most public-school teachers in the Philippines. True to the core value of the university to serve responsively to the needs of the community, the College of Information and Communications Technology Extension Service Office (CICT-ESO) launched a series of training for co-educators who want to hone their skills on an

online platform in the third quarter of 2020. The general goal was to help public-school teachers be more confident in facing the challenges of embracing the new normal in the education system. The webinar was originally intended for partner schools, but the CICT saw an opportunity to serve more educators. Thus, the webinar was opened to all interested parties via FB Live.

In the second quarter of 2021, an online questionnaire was sent via the provided email addresses of the participants to measure the impact of the said webinar in terms of participants' attitudes, confidence, and goal orientation towards using the online platform. Some open-ended questions were also included in determining the tangible impact of the training on them.

This study answers the following research questions explicitly:

1. How may respondents' skills and perceived personalities be compared before and after participating in the G-Suite webinar training?
2. What are the tangible effects of the Information and Communication Technology program (extension activities) on the beneficiaries?

The remainder of this paper is organized as follows: the second section contains a review of the literature; the third section contains a brief discussion of the methodologies used in the study, including a discussion of the research respondents, research instruments, data collection procedures, and statistical treatment used in the study; the fourth section contains the study's results and discussions; and the last section concludes this research effort.

## LITERATURE REVIEW

### *Comparing Two sets of Data from the Same Group*

A t-test is one common statistical tool often used to compare the means of groups assumed to be normally distributed (Mishra et al., 2019). It can be used to compare the meanings of two dependent or independent groups of individuals. The dependent samples t-test, also known as the paired sample t-test, is used to compare the mean responses of the same groups at two different periods. It is used to determine if two means (pre and post-observation of the same group) significantly differ (Ross & Willson, 2017; Valencia, 2021).

### *Role and Impact of Information and Communications Technology*

The role of ICT (e.g., digital books, laptops, multimedia, virtual teaching platforms) in various facets of our lives, especially in improving educational opportunities, has been proven indispensable across the world. It enhances the teaching and learning experience for both teachers and learners. However, integrating ICT into modern education also

needs to address many challenges. Das (2019) identified some of these challenges. Among these are the insufficient ICT facilities in educational institutions, the lack of teachers' skills and knowledge, and the lack of ICT training.

The importance of ICT skills in pandemic times is most apparent, significantly if the situation necessitates abruptly changing the way to provide learning to students from traditional to online. According to Hernandez (2017), teachers' training is the primary option for facing new educational challenges, requiring educators to build skills that allow them to make the most of the available technological tools. Educators should be provided with adequate and relevant ICT training to effectively promote learning and address the diverse educational needs of students in an online mode (Toquero, 2020).

In this study, the effect of training provided by the college on selected beneficiaries was analyzed and presented.

## METHODOLOGY

This study utilized mixed methods research, which is a holistic approach as it allows researchers to analyze both qualitative and quantitative data (Molina-Azorin, 2016; Halcomb & Hickman, 2015; Jokonya, 2016). According to Halcom and Hickman (2015), one of the mixed method designs is the concurrent design, where qualitative and quantitative data are collected simultaneously, which reduces data collection effort.

In this study, qualitative and quantitative data were collected at the same time. The quantitative part of the study focused on the numerical data gathered from the respondents' responses to the closed-ended questions (Cacay, 2022). On the other hand, qualitative research encompasses those that may express experiences (Natividad-Franco et al., 2022). In this study, the open-ended questions included in the last part of the survey were analyzed using the qualitative content analytical approach. Qualitative content analysis is a systematic method that allows the researcher to analyze descriptive content and generate patterns evident in the responses gathered, resulting in categories or themes (Lindgren et al., 2020; De Brún et al., 2022).

### *Data Gathering Procedure*

Data is a vital component in almost all research. Online technology is vital in an exceptional situation like ours now, where face-to-face data collection is not an option. To collect the data needed in the study, the researcher utilized the provided email addresses of the webinar's participants. The questionnaires were converted to Google Forms and sent electronically to the provided email addresses. The responses collected in the second quarter of 2021 were exported in MS Excel and evaluated.

### *Statistical Treatment of Data*

Analysis of the data brings order to the data, and interpretation of it brings meaning to the analysis among other descriptive dimensions. Analyzed and interpreted data were assigned a value or worth by the evaluator. In this study, the statistical tools used in data analysis were mean and t-test.

The data gathered from the respondents was analyzed and presented using Microsoft Excel, Jamovi, and PowerBI. The responses were interpreted using the mean value. The weighted mean was used to determine the quantitative average of responses regarding the webinar's effects on participants' attitudes, confidence, and goal orientation toward online classes after participating in the CICT Webinars. The results describe the webinars' impact in terms of the enumerated criteria as perceived by the respondents. The Five-Point Likert Scale, as shown in Table 1, was used to get the mean of the survey results wherein the study respondents were asked to respond to the item by specifying their level of agreement.

Table 1. Measurement Used to Assess the Survey Results

| Scale | Numerical Rating | Interpretation |
|---|---|---|
| 5 | 4.6 - 5.0 | Strongly Agree |
| 4 | 3.7 - 4.5 | Agree |
| 3 | 2.8 - 3.6 | Neutral |
| 2 | 1.9 - 2.7 | Disagree |
| 1 | 1.0-1.8 | Strongly Disagree |

Paired sample t-test was also used to determine the significant difference between the ratings given by the respondents in the pre-test and post-test self-evaluation responses in terms of effects on attitude, confidence, and goal orientation toward online classes.

## RESULTS AND DISCUSSIONS

The researcher developed a questionnaire that consists of three parts. The first part focuses on the demographic profile of the respondents, such as age, marital status, highest educational attainment, and work affiliation. The second part collects respondents' assessment of their skills, attitudes, confidence, and goal orientation towards online classes before and after taking the CICT Webinars. The last part is an open-ended question that solicits answers from respondents on the tangible effects of the webinar and the project's possible impact on their organization. The questionnaire was validated by a teacher in a partner elementary school and by the webinar trainers. It was then converted into Google form and disseminated to those who participated in the

webinar launched on June 15–17, 2020, via the email addresses they provided in the webinar registration.

The study's respondents are the participants who attended at least three out of the four days of training and were present on the first two days of the webinar series conducted by the college last June 15–17, 2021. Responses collected in the second quarter of 2021 are the composition of the dataset used in this research. There are a total of 154 participants who responded to the questionnaire disseminated by the College.

Descriptive analytics was performed both in the analysis of the demographic profile of the respondents and in the determination of the statistical difference in respondents' attitude, confidence, and goal orientation before and after the webinar using paired t-test analysis in an open-sourced software called Jamovi.

The survey results were downloaded in an excel file and were processed using open-source data analytics software called Jamovi and Power BI. Using Power BI, the respondents' employment affiliation and highest educational attainment are graphically presented as shown in Figures 1 and 2. On the other hand, MS Excel is used to show the distribution of ages among those who attended the webinars and responded to the survey. The obtained data proved that the college extension service programs served a varied clientele.

In total, one hundred fifty-four (154) respondents answered the Google form survey that the College disseminated. One hundred twenty-seven (127) of them are from the government sector, twenty-one (21) are from the private sector, and the remaining six (6) did not provide work affiliation.

| Employment Affiliation | Casual/Contractual/Job Order | Part time | Regular | Tempo | Volunteer | **Total** |
|---|---|---|---|---|---|---|
| | 4 | | | | 2 | **6** |
| Government (Employee) | 2 | 6 | 113 | 5 | 1 | **127** |
| Private Sector | 5 | 7 | 8 | 1 | | **21** |
| **Total** | **4** | **7** | **13** | **121** | **6** | **3** **154** |

*Figure 1.* Respondents' Employment Affiliation

Regarding the highest educational attainment obtained by the respondents, the majority are college graduates, either with a master's degree or currently pursuing advanced higher education. In total, there are 78 college graduates, 57 are either with master's degrees or currently pursuing advanced higher education, nine are with doctoral units or degrees, and five are at the college level, two are high school graduates, one at the high school level, and the remaining two did not provide information on educational attainment.

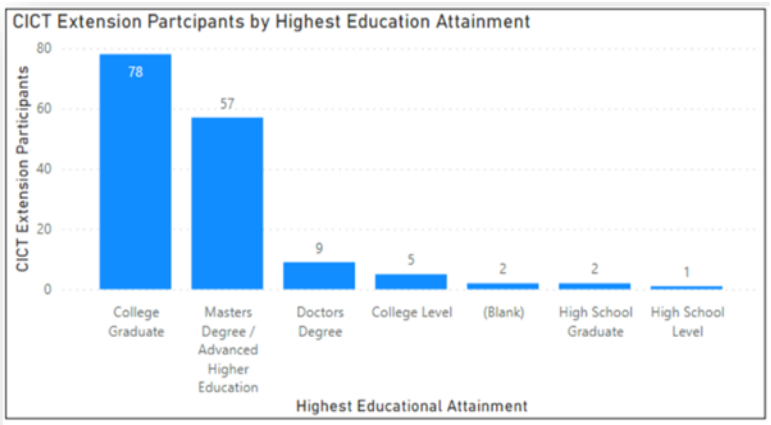


*Figure 2.* Respondents' Highest Educational Attainment

Figure 3 shows the age distribution of the respondents to the survey. The result shows that the majority of the respondents are in the age group between twenty-five and forty-nine, who are in the active workforce of our society.

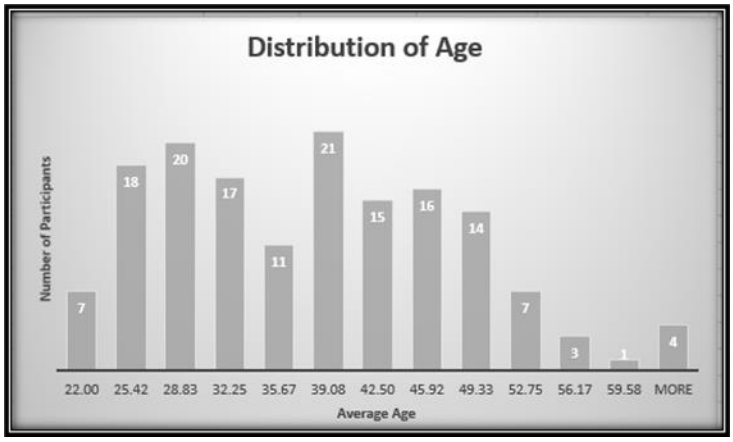


*Figure 3.* Respondents' Age Distribution

## *Close-ended Response Findings*

As shown in Figure 4, the respondents' perceptions of their attitude, confidence, and goal orientation toward online classes after the CICT Webinars were summarized in distribution tables and then interpreted using the mean value. The weighted mean criterion in the evaluation sheet determines the quantitative average of responses. The result obtained indicates that, in general, the respondents agree that the webinar offered by the College has positive effects on respondents' attitude (4.46), confidence (4.45), and goal orientation (4.37) toward online classes.

| Row Labels | Average of AfterAtt_mean | Average of AfterConf_mean | Average of AfterGoal_mean |
|---|---|---|---|
| College Graduate | 4.42 | 4.47 | 4.39 |
| College Level | 4.60 | 4.50 | 4.40 |
| Doctors Degree | 4.22 | 4.33 | 4.39 |
| High School Graduate | 5.00 | 4.75 | 4.50 |
| High School Level | 5.00 | 5.00 | 5.00 |
| Masters Degree / Advanced Higher Education | 4.54 | 4.43 | 4.34 |
| (blank) | 4.00 | 4.00 | 4.00 |
| **Grand Total** | **4.46** | **4.45** | **4.37** |

*Figure 4.* Effects on respondents' attitude, confidence, and goal-orientation towards online classes

A paired sample t-test was conducted to measure the significant difference in the respondent's perception in terms of their attitude, confidence, and goal orientation towards online classes before and after participating in the training. The result of the paired sample t-test conducted using Jamovi is shown in Figures 5 and 6. Figure 5 shows the detailed description of the obtained result. The figure shows the obtained mean values of 2.05 and 4.46 in attitude, mean values of 1.90 and 4.45 in confidence, and mean values of 2.27 and 4.37 in goal orientation towards online classes before and after the training, respectively.

Descriptives

| | N | Mean | Median | SD | SE |
|---|---|---|---|---|---|
| B4Att_mean | 154 | 2.05 | 2.00 | 0.500 | 0.0403 |
| AfterAtt_mean | 154 | 4.46 | 4.50 | 0.605 | 0.0488 |
| B4Conf_mean | 154 | 1.90 | 2.00 | 0.532 | 0.0429 |
| AfterConf_mean | 154 | 4.45 | 4.50 | 0.591 | 0.0476 |
| B4Goal_mean | 154 | 2.27 | 2.50 | 0.575 | 0.0463 |
| AfterGoal_mean | 154 | 4.37 | 4.50 | 0.633 | 0.0510 |

*Figure 5.* A detailed description of the paired sample t-test

Figure 6 shows a mean difference of 2.42 between the respondents' attitudes, a mean difference of 2.56 between the respondents' confidence, and a mean difference of 2.10 between the respondents' goal orientation towards online classes before and after the webinar. The p-value of 0.001 in the mean that evaluates the respondents' attitudes, confidence, and goal orientation before and after the webinar indicates that there is a difference in terms of the above-mentioned criterion, and the difference is real and statistically significant.

Paired Samples T-Test

| | | | statistic | df | p | Mean difference |
|---|---|---|---|---|---|---|
| B4Att_mean | AfterAtt_mean | Student's t | −38.6 | 153 | < .001 | −2.42 |
| B4Conf_mean | AfterConf_mean | Student's t | −41.7 | 153 | < .001 | −2.56 |
| B4Goal_mean | AfterGoal_mean | Student's t | −30.6 | 153 | < .001 | −2.10 |

*Figure 6.* Result of the paired sample t-test

## *Open-ended Response Findings*

The last part of the survey is an open-ended question aimed to gain insights into the tangible effects of the provided extension program on the respondents. There are a total of eighty-three respondents who shared answers to this. Qualitative content analysis can be performed in various ways, enabling researchers to extract common themes or categories (Lindgren et al., 2020). It is non-linear and requires breaking original text into pieces or meaningful units, refining and extracting patterns evident in the responses, and condensing and coding those units (Lindgren et al., 2020; De Brún et al., 2022). In assessing the answers on the tangible effects of the Google Platform Webinar, the word cloud generated using Power BI, as shown in Figure 7, was used where the most common answers appear more prominent than others.

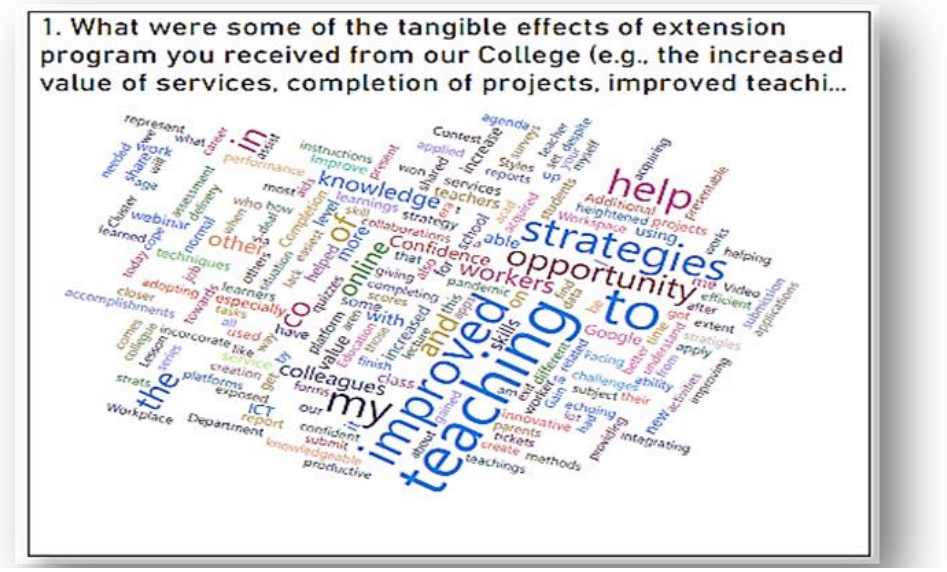


*Figure 7.* Tangible effects of the extension program

Using Power BI, the researcher imported the CSV file containing answers to the open-ended questions and generated a word cloud, as shown in Figure 7. Manual analysis of the CSV file was also performed. The generated graph by the software and the result of the CSV file evaluation revealed that the dominant answers are improved teaching strategies and opportunities to help co-workers or colleagues. The obtained data provided more significant insights into specific respondents' perceptions of the provided training. This also indicates that the positive impact of the training on the participants' co-workers and students extends to others. In addition to the overwhelming effects of the program is an answer from a public-school teacher who expressed intense joy as he became part of a cluster level competition because of his learning and improved skills he acquired from the webinar.

## CONCLUSION

The webinar conducted by the College served educators in the private and public sectors with different levels of educational attainment. The respondents' answers proved that the training brought substantial changes in their attitude, confidence, and goal orientation towards online classes before and after participating in the training, which is statistically significant. The learnings of the participants do not only benefit the participants themselves by improving their teaching strategies, but a vast majority also shared their learnings with their colleagues and students.

## RECOMMENDATIONS AND PRACTICAL IMPLICATIONS

While the learning received by the educators through training and webinars has an impact on themselves, the ripple effect of this was even more profound on the people with whom they shared their skills. In line with this, it is recommended that CICT should continue to launch practical and laudable pieces of training for educators to contribute to the betterment of many. It is also recommended that a periodic assessment of the different extension activities of the college be done to further improve the delivery of service to its surrounding community.

## REFERENCES


Cacay, A. D. (2022). Effectiveness of Peer Assessment as Teaching Innovation: A Classroom-based Action Research. *Puissant*, *3*, 465–473.

Das, K. (2019). The Role and Impact of ICT in Improving the Quality of Education: An Overview. *International Journal of Innovative Studies in Sociology and Humanities*, *4*(6), 97-103.

De Brún, A., Rogers, L., Drury, A., & Gilmore, B. (2022). Evaluation of a formative peer assessment in research methods teaching using an online platform: A mixed methods pre-post study. *Nurse Education Today*, *108*, 105166. https://doi.org/10.1016/j.nedt.2021.105166

Flores, M. A., & Swennen, A. (2020). The COVID-19 pandemic and its effects on teacher education. *European Journal of Teacher Education, 43(4),* 453-456.

Halcomb, E., & Hickman, L. (2015). Mixed methods research. *Nursing Standard*, *29*(32), 41–47. https://doi.org/10.7748/ns.29.32.41.e8858

Hernandez, R. M. (2017). Impact of ICT on Education: Challenges and Perspectives. *Propósitos y Representaciones* , *5*(1), 325–347. https://doi.org/http://dx.doi.org/10.20511/pyr2017.v5n1.149

Jacob, W., Sutin, S. E., Weidman, J. C., & Yeager, J. L. (2015). *Community Engagement in Higher Education: Policy Reforms and Practice.* Rotterdam, The Netherlands: Sense.

Jokonya, O. (2016). The Significance of Mixed Methods Research in Information Systems Research. *MWAIS 2016 Proceedings.* https://doi.org/https://aisel.aisnet.org/mwais2016/20

König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). *Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany*. *European Journal of Teacher Education, 43*(4), 608-622.

Lindgren, B.-M., Lundman, B., & Graneheim, U. H. (2020). Abstraction and interpretation during the qualitative content analysis process. *International Journal of Nursing Studies*, *108*, 103632. https://doi.org/10.1016/j.ijnurstu.2020.103632

Magsaysay, E. (2010). *House Bill No 2815*. First Regular Session Fifth Congress, Republic of the Philippines.

Molina-Azorin, J. F. (2016). Mixed methods research: An opportunity to improve our studies and our research skills. *European Journal of Management and Business Economics, 25*(2), 37-38. http://doi.org/10.1016/j.redeen.2016.05.001

Mishra, P., Pandey, C., Singh, U., Mishra, P., & Pandey, G. (2019). *Application of student's t-test, analysis of variance, and covariance*. *Annals of Cardiac Anaesthesia,* 22, 407-11.

Natividad-Franco, V., N. Dela Cruz, M., & Carangan, M. A. (2022). Shaping the environmental education in school: Basis for enhancing extension services to the Coastal Community. *Puissant*, *4*, 736–746. https://doi.org/10.2139/ssrn.4154376

Ross, A., & Willson, V. L. (2017). Paired samples T-test. *Basic and Advanced Statistical Tests*, 17–19. SensePublishers, Rotterdam. https://doi.org/10.1007/978-94-6351-086-8_4

Sahu, P. (2020). *Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff*. Cureus, 12(4).

Toquero, C. M. (2020). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Research, 5*(4), em0063. https://doi.org/10.29333/pr/7947

Tria, J. Z. (2020). *The COVID-19 pandemic through the lens of education in the Philippines: The new normal. International Journal of Pedagogical Development and Lifelong Learning*, *1*(1), 2-4.

Valencia, M. (2021, April). *Basic Data Analytics and Visualization*. *Basic Data Analytics and Visualization*. Online platform.