



The Effect of Self-Efficacy on Organizational Citizenship Behavior (OCB) of Science Teacher Candidates in Technology-Based Learning

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Abstract: The 21st century requires science teacher candidates to be skilled in using technology in learning. Science teacher candidate who is carrying out field practice experiences by applying technology-based learning must also have high self-efficacy and OCB. This study aimed to analyze self-efficacy's effect on the Organizational Citizenship Behavior (OCB) of science teacher candidates in technology-based learning. This research was conducted among the candidate of science teachers at Mataram Universitas Islam Negeri Mataram as many as 78 science teachers. The sampling technique used is probability sampling. The data collection used is the distribution of self-efficacy and OCB questionnaires. Data analysis used descriptive and inferential statistics in simple linear regression tests in the form of t-tests and significance. To measure self-efficacy using indicators of magnitude, generality, and strength, while to measure Organizational Citizenship Behavior using indicators of Altruism, Conscientiousness, Sportsmanship, Courtesy, and Civic Virtue. The results showed that the t-count value of 6.284 was greater than the t-table of 1.665. The significance value also shows 0.03. This shows that the significance value is smaller than the value of 0.05. The results of the hypothesis test indicate that the self-efficacy of science teacher candidates has a significant effect on Organizational Citizenship Behavior in technology-based learning.

Keywords: Science teacher candidates; Self efficacy; Organizational citizenship behavior; Technology.

Introduction

Advances in Science and Technology bring rapid changes in human life. Advances in science and technology in everyday life change human relations with information and knowledge (Kassymova et al., 2019; Tayibnapi et al., 2018; Ismail et al., 2022). The development of science and technology has an impact on very rapid progress in all spheres of life, including in the world of education (Bahtiar et al., 2016; Morozov & Kozlov, 2019). Ali, (2020); Putri et al., (2020) stated that Technology and scientific developments have impacted how teaching aids are used in classrooms and other educational settings. As information technology in education started to advance, the paradigm for teaching and learning started to change (Bozkurt, 2019). Computer-based teaching is the term for the use of technology in education (Oduma et al., 2019; Bahtiar &

Ibrahim, 2022) and e-learning or web-based learning (Magdalene & Sridharan, 2018). Technology-based learning in schools requires science teachers candidate to be able to use technology-based learning tools/media (Sinaga et al., 2019; Wasehudin & Anshori, 2021; Bahtiar & Azmar, 2022).

Technology-based learning is also very important to be applied by science teacher candidates in science learning. Science learning in addition to conducting direct investigations must also be creative in designing or conducting virtual investigations. Virtual investigations can use technology-based learning media, such as PheT simulations, and Edmodo (Bahtiar et al., 2022; Maimun & Bahtiar, 2022). The science teacher's candidate contribution in realizing the application of technology in learning is determined by many factors de Jong (2019), including how big the tendency/awareness

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of the teacher is to realize his extra role behavior known as Organizational Citizenship Behavior (OCB).

OCB is an employee's work behavior within the organization (Sambung, 2019; Wingate et al., 2019), which is carried out voluntarily outside the job description that has been set (Kuncoro & Wibowo, 2019), with the aim of improving the progress of organizational performance (Aina & Atan, 2020). Ribeiro et al., (2018); Suwanti et al., (2018) also stated that OCB refers to a person's readiness to go above and beyond what is required of them in their job. In addition, Fazriyah et al., (2019) state that OCB is an action taken by members of the organization that exceeds the formal provisions of their work. With OCB, science teachers candidate is not only bound by their formal duties but have a concern for extra tasks that extend to other institutional tasks (Gefen & Somech, 2019).

OCB directs science teachers candidate to take positive actions that benefit school organizations (Ghalavi & Nastieziaie, 2020), indicated by voluntary behavior to work hard to help students (Sari et al., 2019), colleagues, and schools in carrying out learning tasks (Naully et al., 2022). OCB also directs teachers to be willing to work beyond their main duties (Turnipseed, 2018), protect the interests of school organizations (Magnier-Watanabe et al., 2022), and take greater responsibility for advancing themselves and the organization (Noh & Lee, 2022). Teachers in schools with high OCB can carry out their duties innovatively, encourage extracurricular activities, and if there are students in need, be prepared to assist them after hours., and do not give assignments to students that are too heavy. OCB in schools is also described by teachers being diligent in providing learning, utilizing time efficiently, working collaboratively, and emphasizing professional activities rather than personal activities (Kiral, 2020). Thus, to grow and optimize teacher OCB in schools, supporting factors are needed. One of the factors that support teacher OCB is self-efficacy (Muliati et al., 2022).

According to Kim et al., (2019) and Tam et al., (2021), self-efficacy is confidence in one's capacity to mobilize the motivation (Park & Avery, 2019), cognitive resources, and behaviors required to satisfy certain situational demands. A person's impression of how easy or difficult an activity is to complete or their confidence in their own capacity to do so is both examples of self-efficacy (Tus, 2020; Badrun et al., 2022). How much effort is made and how people persevere in the face of challenges and unpleasant experiences are highly influenced by a teacher's level of self-efficacy (Razzaq et al., 2018). One of the key elements influencing teacher OCB is self-efficacy, which refers to a person's sense of motivation for carrying out particular tasks that include self-efficacy considerations and information technology self-confidence (Haq et al., 2022). In other words, human

endeavors to realize a positive self-existence and to accomplish something demand an optimal sense of personal effectiveness.

The self-efficacy of each teacher is different. Self-efficacy that has been formed will affect and give a function to teacher activities in learning (Arslan, 2019; Huang et al., 2020). Teachers with high self-efficacy will determine the strategies that will be carried out in completing the work to achieve the desired success (De Smul et al., 2018). Teachers who have good self-efficacy are also reflected in their pedagogical success and the achievements of the students they teach (Cansoy & Parlar, 2018). The following presents a model in the form of an image related to teacher self-efficacy.

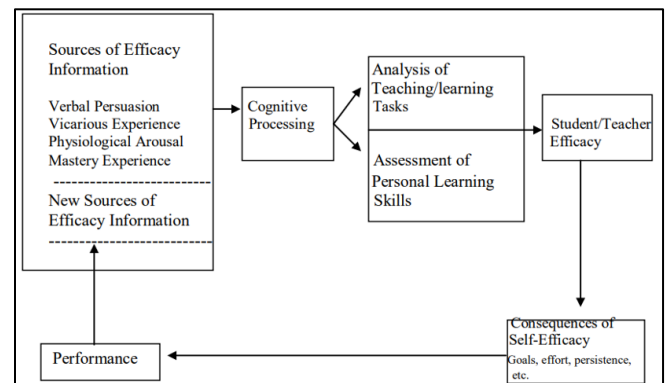


Figure 1. Teacher Self-Efficacy Model

The results of interviews with representatives of science teachers' candidate who carried out Field Practice Experiences in three schools, namely MTsN 1 Mataram, MTsN 2 Mataram, and MTs Hidayatullah Mataram stated that teacher self-efficacy was different. These differences include the teaching load that can be obtained, the income obtained, and the intensity of participating in the training. The involvement of teachers in activities outside their profession is also different. This means that every teacher's OCB is different. The results of the literature study also show that there is an influence between teacher self-efficacy and OCB (Choong et al., 2019; Soto & Rojas, 2019; Umrani et al., 2019).

The phenomenon that occurs above is what the researcher thinks is unique and wants to be studied more deeply about OCB and self-efficacy in science teachers' candidate at Universitas Islam Negeri Mataram who are carrying out Field Practice Experiences as well as being one of the reasons behind researchers conducting research. Based on the problems that have been disclosed, the researchers are interested in conducting research on "The Effect of Self-Efficacy on Organizational Citizenship Behavior on Science Teachers Candidate in Technology-Based Learning".

Method

Research Design

This study is quantitative in nature. In order to calculate the frequency and percentage of responses from a sample of people or residents who are requested to respond to a variety of survey questions, a method of measuring quantitative data and objective statistics known as quantitative research is used (Bloomfield & Fisher, 2019). The creation and application of mathematical models, theories, and/or hypotheses pertaining to a phenomenon is the goal of quantitative research. Correlational quantitative research is the kind that is used. Correlational research, according to Nardi (2018), aims to establish the association between two variables.

Research Variable

Self-efficacy served as the independent variable in this study while OCB served as the dependent variable. A person's assessment of their own competency or capacity to carry out a task, accomplish a goal, or get through a challenge is known as self-efficacy. OCB is behavior beyond the obligations of the job description that science teachers' candidate to help other organizations.

Participants

This research was conducted on science teachers' candidate in Universitas Islam Negeri Mataram who are carrying out Field Practice Experiences. The research's sampling method is probability sampling. This means

that all populations have the same opportunity to be the research sample. The number of research samples was 78 science teachers' candidates.

Research Procedures

This research was conducted from May 2022 to June 2022. This research was only conducted on educators and education staff who were willing to fill out the questionnaire. The following is a procedure for conducting research.

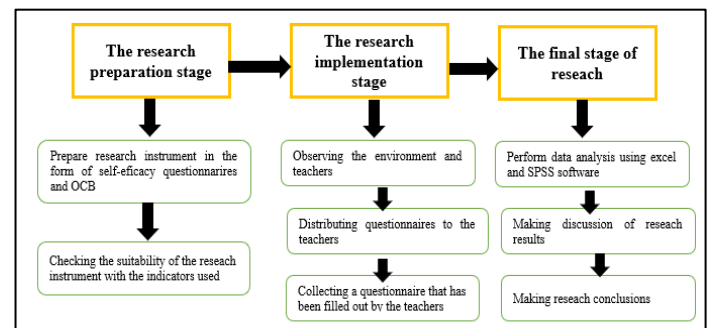


Figure 2. Research Procedures

Instruments

A research instrument is a tool used in research activity, specifically as a measurement and data collection. The research instrument is a self-efficacy and Organizational Citizenship Behavior questionnaire. Collecting research data using a questionnaire. The following will explain the grid of questionnaires used in this study.

Table 1. Self-Efficacy Questionnaire Grid

Indicator	Aspect	No. Item	Scale
Magnitude Level	Confidence in completing the given task	1, 2, and 3	Likert
	Confidence to find a solution to every problem	4 and 5	Likert
	Confidence to complete task that are difficult	6 and 7	Likert
Generality	Be positive in all situations	8 and 9	Likert
	Able to learn from experience	10	Likert
	Show self-confidence	11 and 12	Likert
Strength	Have high self-confidence	13	Likert
	Have a responsible attitude	14	Likert
	Feeling hopeless or frustrated	15	Likert

Table 2. Organizational Citizenship Behavior Questionnaire Grid

Indicator	Aspect	No. Item	Scale
Altruism	Giving help	1, 2, and 2	Likert
Conscientiousness	Volunteer	4 and 5	Likert
Sportsmanship	Tolerance	6, 7 and 8	Likert
Courtesy	Politeness	9, 10, and 11	Likert
Civic virtue	Caring for coworkers	12 and 13	Likert
	Participate in all agency activities	14 and 15	Likert

Data Analysis

In accordance with the type of research discussed in quantitative research. Quantitative data analysis methods, which can be broadly classified into two

categories: descriptive statistical analysis and inferential statistics, were used to analyze the data. The collected questionnaire data was then analyzed and continued with the analysis. Inferential statistics were used to

assess research hypotheses, while statistics were used to describe self-efficacy in structure and OCB. Using SPSS to help test the basic linear regression hypothesis, H_0 is accepted if t_{count} is less than t_{table} and greater than 5%, and H_1 is rejected if t_{count} is greater than t_{table} and less than 5%.

Result and Discussion

This study aims to determine how the influence of science teacher candidate self-efficacy on OCB in technology-based learning. This research was conducted on science teachers' candidate in three study programs, namely physics education, chemistry education, and biology education at Universitas Islam Negeri Mataram who were carrying out field practice experiences at school. Data on self-efficacy and OCB were obtained from questionnaires distributed to 78 prospective science teachers. The following is the self-efficacy data for science and OCB teacher candidates.

Self-Efficacy

Science teacher candidate self efficacy data are presented in three types of exposure, (1) science teacher candidate self-efficacy based on indicators; (2) science teacher candidate self-efficacy based on the frequency of answers from the Likert scale; and (3) science teacher candidate self-efficacy by the study program. The

following are the results of the science teacher's candidate self-efficacy research based on indicators:

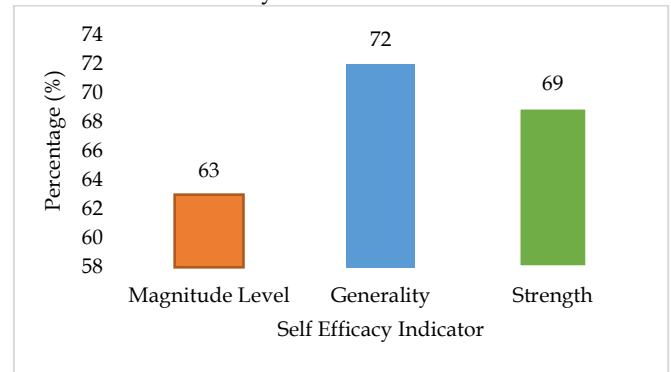


Figure 3. Science Teacher Candidate Self-Efficacy Based on indicators

Figure 3 shows that the science teacher candidate self-efficacy of each indicator is different. The self-efficacy on the magnitude level indicator is 63%. The self-efficacy on generality indicators is 72%. The self-efficacy on strength indicators was 69%. In addition to analyzing science teacher candidate self-efficacy based on indicators, science teacher candidate self-efficacy was also analyzed per item by looking at the frequency of answers given by each science teacher candidate. The following is presented in Figure 4 related to the results of the study.

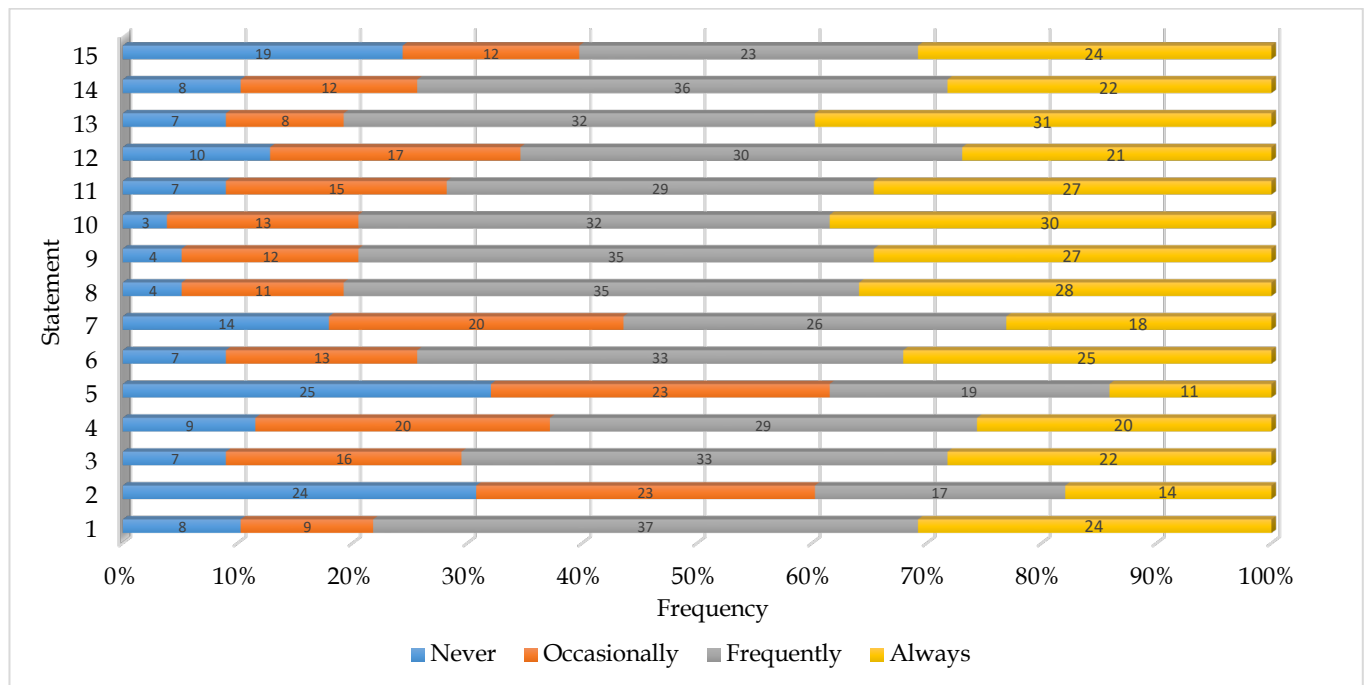


Figure 4. Science Teacher Candidate Self-Efficacy Based on the Frequency of Questionnaire Answers

Based on Figure 4, it can be seen that science teacher candidate who gave scores of three and four in the form of answers "Always" and "Often" were more dominant than teachers who gave scores of one and two in the

form of answers "Sometimes" and "Never". Science teacher candidate self-efficacy was also analyzed based on the study program. Here, the results of the analysis are presented in the form of Figure 5.

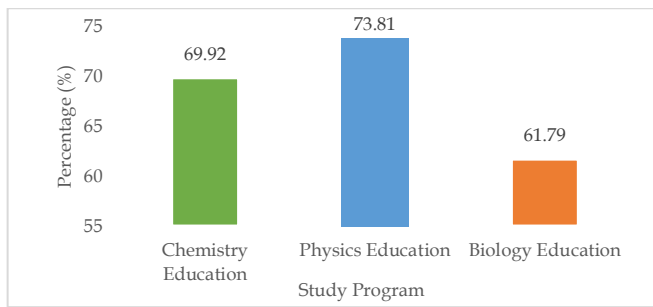


Figure 5. Science Teacher Candidate Self-Efficacy Based on Study Program

Based on Figure 5, it is known that the science teacher candidate self-efficacy of chemistry education is 69.92%, science teacher candidate self-efficacy of physics education is 73.81%, and science teacher candidate self-efficacy of biology education is 61.79%. In general, the self-efficacy of science teacher candidate in the three study program is presented in Table 3.

Table 3. Science Teacher Candidate Self-Efficacy Descriptive Analysis

	N	Min	Max	Mean	Std. Deviation
Chemistry Education	31	33	46	40.84	3.787
Physics Education	27	38	50	43.67	3.606
Biology Education	20	31	43	36.85	3.631

Table 3 shows that the average self-efficacy of science teacher candidate of chemistry education is 40.84 with a minimum score of 33 and a maximum value of 46 and a standard deviation of 3,787. The self-efficacy of science teacher candidate of physics education also shows that the average is 43.67 with a minimum score of 38 and a maximum value of 50 and a standard deviation of 3,606. The table above also shows that the average

self-efficacy of science teacher candidate of biology education is 36.85 with a minimum score of 31 and a maximum value of 43 and a standard deviation of 3.631.

Organizational Citizenship Behavior

The science teacher candidate OCB in this study used fifteen statements that were distributed to the science teachers' candidate who were the sample of this study. The research data are presented in three types of exposure, namely: (1) science teacher candidate OCB based on indicators; (2) science teachers' OCB based on the frequency of answers from the Likert scale; and (3) science teacher candidate OCB based on study program. The following describes the OCB of science teacher candidate based on indicators in the form of Figure 6.

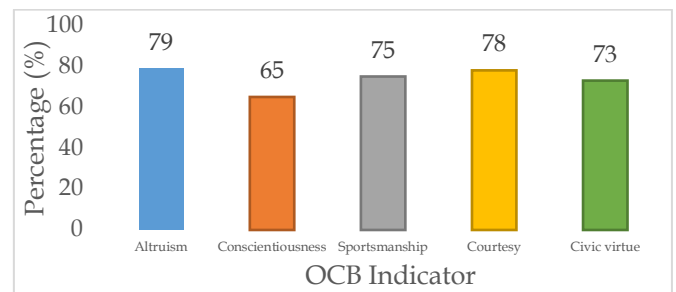


Figure 6. OCB Science Teacher Candidate Based on Indicator

Figure 6 shows that the OCB of science teacher candidate on the altruism indicator is 79%. The OCB of science teacher candidate on the conscientiousness indicator is 65%. The OCB of science teacher candidate on the sportsmanship indicator is 75%. The OCB of science teacher candidate on the courtesy indicator is 78%. The OCB of science teacher candidate on the civic virtue indicator is 73%. The science teacher candidate OCB was also analyzed based on the frequency of the science teacher candidate answers to each statement given. The following shows the results of the research in the form of Figure 7.

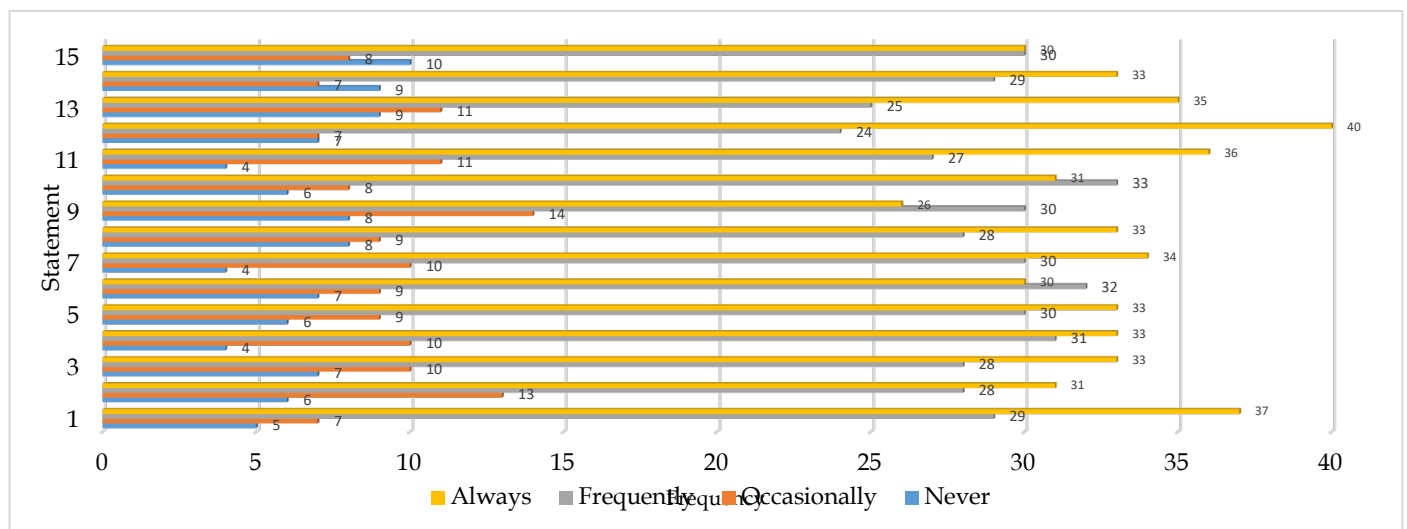


Figure 7. OCB Science Teacher Candidate Based on Frequency of Questionnaire Answers

Figure 7 shows that of the fifteen statement items distributed to science teacher candidate in three study programs, the science teacher candidate who answered the statement by giving a score of four, namely "Always" was more dominant than the teachers who scored one or two on each statement. OCB of science teacher candidate is also seen by study program. In the following, the OCB of science teacher candidate in each study program is presented.

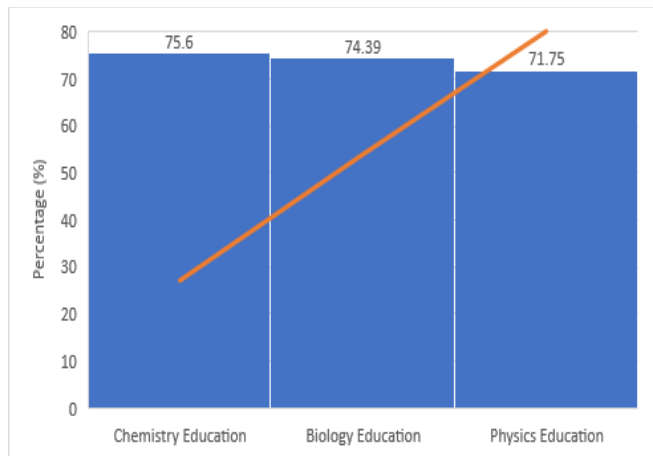


Figure 8. OCB Science Teachers Candidate by Study Program

Figure 8 is an explanation of the results of research related to science teacher candidate OCB based on study program. The OCB of science teacher candidate in chemistry education was 75.6%, the OCB of science teacher candidate in physics education was 74.39%, and the OCB of science teacher candidate in biology education was 71.75%. In general, the OCB of science teacher candidate in the three study program is presented in Table 4.

Table 4. OCB Science Teacher Candidate Descriptive Analysis

	N	Min	Max	Mean	Std. Deviation
Chemistry Education	31	39	50	43.68	3.145
Physics Education	27	39	50	43.63	3.364
Biology Education	20	39	49	44.50	3.426

Table 4 shows that the average OCB of science teacher candidate in chemistry education is 43.68 with a minimum score of 39 and a maximum score of 50 and a standard deviation of 3.145. The OCB of science teacher candidate in physics education also shows that the average is 43.63 with a minimum score of 39 and a maximum score of 50 and a standard deviation of 3.364. The table above also shows that the average OCB of

teachers at science teacher candidate in biology education is 44.50 with a minimum score of 39 and a maximum value of 49 and a standard deviation of 3.426.

Analysis Prerequisite Test

Analysis prerequisite testing is a basic concept to determine which test statistics are needed, and whether the test uses parametric or non-parametric statistics. The analytical prerequisite test used in this study is the normality test. The results of the normality test are presented in Table 5.

The significance value of Asymp Sig (2-tailed) is 0.084, which is greater than 0.05, according to the SPSS output table. This suggests that the distribution of the data is normal. As a result, the regression model's presumptions or conditions for normalcy have been met. Normally distributed data can also be seen in Figure 9.

Table 5. Normality Test Output

Unstandardized Residual		
N		78
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	3.237775430
Most Extreme Differences	Absolute	.094
	Positive	.094
	Negative	-.084
Test Statistic		.094
Asymp. Sig. (2-tailed)		.084 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

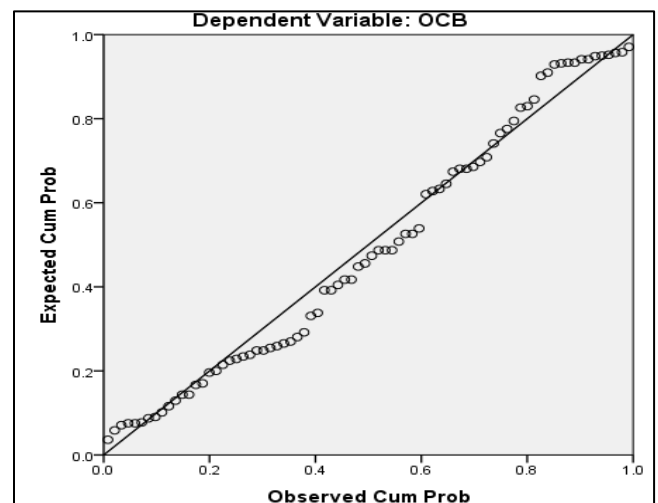


Figure 9. Normal P-Plot of Regression Standardized Residual

Figure 9 demonstrates how the points approach and follow the diagonal line, demonstrating that the regression model satisfies the assumption of normality.

Hypothesis Testing

The findings from the hypothesis test are shown in Table 6. Based on Table 6 above, it is known that the

value of the t-count is 6,284. This t value is greater than the t-table value of 1,665. this indicates that efficacy affects science teacher candidate OCB in technology-based learning. The table above also shows that the

significance value is 0.03. this shows that the significance value is less than 0.05, so it can be concluded that self-efficacy has a significant effect on science teacher candidate OCB in technology-based learning.

Table 6. Hypothesis Test Output

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	39.538	3.394		11.649	.000
	Self-Efficacy	.106	.083	.146	6.284	.003

a. Dependent Variable: OCB

Self-efficacy and OCB are two variables that must be owned by science teacher candidate. Science teachers candidate during the transition from the COVID-19 pandemic to the New Normal are required to master technology-based learning (Pham & Ho, 2020). Science teacher candidate in technology-based learning during field experience practice must prioritize self-efficacy and good OCB. Self-efficacy is the ability and confidence of a science teacher candidate in carrying out his duties so that the desired goals are achieved (Saputra et al., 2022; Shin, 2018). Science teacher candidate self-efficacy in this study includes (1) magnitude, namely the belief in completing the given task, especially related to technology-based learning, and the belief in finding a solution to every problem. (2) generality, namely being positive in all situations, being able to learn from experience, and showing a confident attitude. (3) strength, namely science teachers candidate have high confidence in technology-based learning and science teachers candidate have a responsible attitude toward technology-based learning (Izaak & Rini, 2019; Wahyuni et al., 2021).

The results showed that the science teachers' candidate self-efficacy for each indicator was different. Science teachers' candidate in the three schools had higher self-efficacy on the generality indicator. This shows that the science teacher candidate is able to apply something that has been learned to something new. In addition, science teachers' candidate also has the ability to show higher self-confidence. The results of this study are in line with the research conducted Corry & Stella, (2018); Mukti & Tentama, (2020) which states that science teachers have the ability to apply the experience gained in carrying out their duties. However, science teacher candidate has lower confidence in completing assignments and finding solutions to problems than other indicators. The results of this study are in line with research conducted by Love et al., (2019) which states that science teachers' confidence in completing their assignments or work is low, so the impact on the desired results is low. Science teachers candidate who have high self-efficacy provide initiative and persistence to improve their efforts and performance (Razmi et al., 2020), while science teachers who have low self-efficacy

will reduce their efforts and performance (Mumtaz & Parahoo, 2019; Rahayu, 2018).

OCB science teacher candidate are based on different indicators. The results showed that the altruism indicator was higher than other indicators. This indicates that science teacher candidate have a higher behavior of providing help to fellow co-workers and organizations than others. The conscientiousness indicator is the lowest indicator owned by science teacher candidate. This indicator relates to the science teacher's candidate voluntary attitude in the workplace. The results of this study are in line with research conducted by Zbierowski, (2020); Basu et al., (2017) which state that the altruism indicator is higher than other indicators of teacher OCB. Research conducted by Widodo et al., (2022); Shrestha & Subedi, (2020); Shrestha & Dangol, (2020) also stated that the lowest OCB indicator was the Conscientiousness indicator.

Each study program has a different science teacher candidate OCB behavior. The results of the research show that biology education, have higher science teacher candidate OCB than science teachers' candidate at chemistry education and physics education. This is because science teachers' candidate in the biology education study program have a higher sense of concern and volunteerism towards the school where they carry out field experience practices compared to science teacher candidate in the physics education and chemistry education study program. In addition, many science teacher candidates in the biology education study program are devoted to activities that advance the school's vision and mission. With OCB, science teachers' candidate during the practice of field experience are not only bound by their formal duties but also have a concern for extra tasks that include other institutional tasks. By carrying out this task, science teacher candidate no longer thinks about benefits and rewards, but have a calling to devote themselves fully to the world of education. Achievement-oriented science teacher candidates will continue to demonstrate OCB as long as there is sufficient opportunity to do so.

Helping others, volunteering for extra work, and adhering to workplace policies and procedures are just a few of the behaviors that make up OCB (Wibowo &

Mochklas, 2020). These actions are examples of prosocial behavior or helpful, constructive, and positive social activity, and they characterize the "added value of instructors." The science teacher's candidate motivation to perform extra roles is due to the personal encouragement that has been obtained from the results of the cognition process in relation to the environment. If in an organization every science teacher candidate has a good OCB, it will improve good performance so that it can support better organizational development (Sholikhah et al., 2019).

This is the basis for researchers wanting to know the effect of science teacher candidate efficacy on OCB in technology-based learning. The findings demonstrated a substantial relationship between science teacher candidate OCB in technology-based learning and science teacher candidate self-efficacy. The results of this study are in line with research conducted by Choong et al., (2019); Ullah et al., (2021); Anfajaya & Rahayu, (2020) which state that self-efficacy affects science teachers' candidate OCB. Science teacher candidate who has self-efficacy will be more satisfied with their work and science teacher's candidate who have self-efficacy will be more likely to help colleagues in their work and often increase OCB behavior.

Conclusion

The study's findings and discussion lead to the conclusion that the self-efficacy of science teacher candidates at chemistry education, physics education, and biology education varies. Science teacher candidates at physics education have a higher percentage of self-efficacy than teachers at chemistry education and biology education. However, the OCB of science teacher candidates at biology education is higher than the OCB of science teacher candidates at physics education and chemistry education. In general, science teacher candidate efficacy in the three-study program has a significant effect on Organizational Citizenship Behavior in technology-based learning.

The findings of this study will benefit education since they will give science teachers candidate fresh perspectives, knowledge, and understanding of their efficacy and OCB. The results of this study do, however, have some limitations because they only consider science teacher in Universitas Islam Negeri Mataram and the sample size is too small to allow for generalizations.

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