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Research Article

Did K to 12 and COVID-19 as checkpoints lower down the Self-Efficacy of Undergraduate Cohorts?

ABSTRACT

Has COVID-19 pandemic lowered down the self-efficacy of then-K to 12 undergraduate cohorts? This study explored on the comparative mean level of confidence of undergraduates (n=990) of a large public state university in Pangasinan, Philippines, collected in the first quarter of 2022 using an adopted survey-questionnaire on General Self-Efficacy. Salient findings showed that the cohorts had an increase mean level of self-efficacy even during a pandemic compared with their cohort six years ago. Further, social self-efficacy received the highest mean while enlisting parental and community support recorded the lowest. This is in contrast with the cohort of 2016 which reported self-regulated learning and self-regulatory self-efficacy with highest and lowest means, respectively. Data analysis showed significant differences in both the means in terms of strand and field of specialization in the cohort 2016 and 2022, respectively. Further, statistical analysis revealed that the difference in mean self-efficacy of both cohorts is significant at both 0.05 and 0.01 level of alpha. The researchers concluded that COVID-19 did not lower down the self-efficacy of undergraduates in learning in higher education institutions in the Philippines, based on the sample taken. Further, data suggest that the implementation of flexible learning even during post-pandemic period could be sustained in the perspective of the students. However, this study recommends that those HEIs which opt to continue Flexible Learning should assess or re-assess their readiness for its sustained implementation.

KEYWORDS

COVID-19, Higher Education, Flexible Learning, Self-Efficacy

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INTRODUCTION

Self-efficacy, in a general sense, is the belief of a person to himself or herself in performing an action, for example, to play the piano, to perform in a singing competition, to operate a computer, to write a lesson plan, to draft a business proposal, and the like. This concept has been popularized by Bandura in 1997 and is (Bandura, 1997) considered an integrative theoretical framework to explain and predict psychological changes achieved by different modes of treatment. Because of the generalizability of this concept, it has been employed in various fields from macro-level on academic performance to the micro-level on medical self-care (Tan *et al.*, 2021) after-stroke management (Honick, 2016) and long-related emotions (Hayat *et al.*, 2020). Self-efficacy is indeed a measure of 'doability metrics' considered by experts. Today, self-efficacy appears in many specific non-general tasks already as an area of interest for example self-efficacy to do research (Rahon *et al.*, 2020)

The studies of Saccinto *et al.* (2013), Marceron and Rohrbeck (2019), Ringeisen *et al.* (2019) as cited by Zuo *et al.* have shown that self-efficacy is effective in reducing stress and generating coping strategies for individuals facing stressful life events. The studies of Garris and Fleck (2020), Kebede *et al.* (2020), Tabenero *et al.* (2020) reported that self-efficacy played a positive role in maintaining optimism and mental health. Garris and Fleck, further, found that when students are required to study online during COVID-19 period, those with high self-efficacy evaluated more positive about online courses. However, several studies reported that stressful events could damage self-efficacy as well (Zuo *et al.*, 2021). For example, Saigh *et al.* (1995) conducted a research on adolescents aged 13, and found that those with PTSD had lower self-efficacy. The study of Ginzburg *et al.* (2003) showed that Israeli veterans who were injured in war had low self-efficacy. The study of Alexander and Ward (2018) explained that people facing disasters exhibit low coping ability and physiological responses, which in turn reduces self-efficacy.

The COVID-19 was declared as a pandemic by the World Health Organization in 2020 and has affected economy and education. In the field of education, and for more than 2 years already, schools were still closed for in-person classes, but a few countries have been gradually opening in-person classes already with the hope that COVID-19 cases continue its slow infection rate trend. Medical experts consider this virus to live among communities and that the world has to be immune so as not to cause another spike in its cases. During this time of pandemic, fear of the unknown is one leading cause of anxiety among the people. In the field of education, parents were worried that when in-person classes open, their children might get infected. They fear to send their children back to school. The learners, on the other hand, fear that flexible learning (i.e. online learning, modular learning, hybrid learning) implemented by their respective schools.

The Terror Management Theory (Greenberg *et al.*, 1986); Pyszcznski *et al.*, 1990) posited that individuals are vulnerable to external threat. However, people can minimize terror and protect their mental health by maintaining self-esteem (self-efficacy). Anxiety, specifically, can be lowered accompanied by the maintenance of self-efficacy. The finding of Garnefski *et al.* (2002) demonstrated that teenagers are more vulnerable to psychological problems facing disasters, because their coping strategies are fewer compared to adults, which manifests as more rumination and less positive reappraisal of situations. Thus, it is imperative to support young people during this tough period and to rebuild their mental health (Zuo *et al.*, 2021), as cited by Zuo *et al.*

This study explores on the self-efficacy of undergraduates in the Philippines, in order to shed light on the reports that the COVID-19 has negatively affected the self-efficacy of college students using a sample of undergraduate students in a public university in the Philippines. Further, data were compared with the same batch of undergraduate who were taken as sample respondents in a 2016 study in the same province where the study's respondents were taken from, to ensure that local setting is similar.

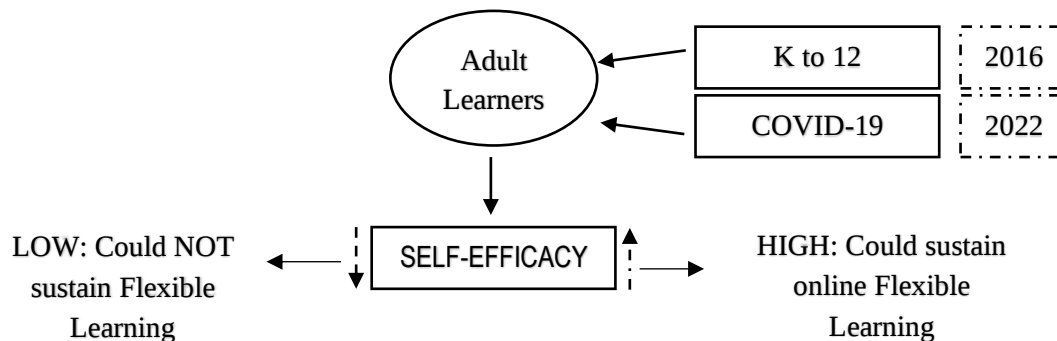


Figure 1. Source: Dr. J.S. Camara's Lecture Notes

Figure 1 shows how each of the variables and data relate with one another. Based on Figure 1, two major disruptions in the curriculum occurred. A 2016 enhancement (positive disruption) when the K to 12 Basic Education Curriculum was implemented in the Philippines and a 2022 pandemic (negative disruption) when the COVID-19 pandemic hit the world that temporarily closed all in-person classes. The study's focus is the effect of these two disruptions in the adult learners' confidence to continue learning, i.e. self-efficacy. Further, Figure 1 puts forward the idea that if the self-efficacy of the adult learners were negative affected by the COVID-19 pandemic (low self-efficacy), then Flexible Learning could not be sustained. A high self-efficacy however is hoped to provide evidence that learning could still push through and that flexible learning which was put in place among universities worldwide as alternative to in-person classes could be sustained.

METHODOLOGY

This research excerpted data from a study entitled 'Self-Efficacy as Indices of Sustained Online Scheme for Pre-Service Teachers' of the College of Teacher Education in a state university in the Philippines. This is to provide focus on the level of confidence of pre-service teachers (n=990) on several aspects of their self-efficacy through the lens on COVID-19 pandemic as a checkpoint. The study is descriptive-quantitative that employed an adopted survey-questionnaire from [Camara \(2018c\)](#) in collecting data from the participants. This is an appropriate method for the research in order to describe the attributes of the respondents at the time of data-collection. The data were collected from pre-service teachers (n=990) during the second semester of School Year 2021-2022 from a sample of undergraduate students in a large and performing university in Pangasinan, Philippines. During this time of data-collection, this HEI was and has been implementing a flexible learning modality (i.e. online learning) in all programs and in call courses. The data were compared with the self-efficacy findings in a 2018 study among a 2016 cohort of senior high school students. During that time of data-collection, the Philippines has started implementing the K to 12 Basic Education Curriculum that added two years in schooling, now known as the Senior High School. The 2016 respondents are the same cohort of this study's participants. Permission to use the 2016 data are sought

from the journal where the data were taken, since one of the researchers is a co-researcher of today's study. This approach is similar to the data-collection employed by [Xue et al. \(2021\)](#) when 2018 files were matched with 2020 files of their respondents. For both studies, similar survey-questionnaire was administered, with the 2022 copy slightly modified to include the online learning nature of instruction. It was validated by a panel of examiners that included researchers who had published studies related to self-efficacy in 2019 and 2020. Data were subjected to weighted mean, ANOVA, and t-Test of independent samples.

RESULTS

Cohort 2016 showed 'moderate confidence' on levels of self-efficacy during K to 12

In 2016, the K to 12 Basic Education Curriculum was implemented in the Philippines. The self-efficacy of the then K to 12 students were determined through a survey-questionnaire using a sample of senior high school in Pangasinan, Philippines (n=260). This sample now referred to as cohort 2016 showed their level of confidence in various aspects of Bandura's Self-efficacy as reported in Table 1.

Table 1. Summary on Reported Mean Levels of Confidence of Cohort 2016 (n=260)

No	Area	TVL-CProg	TVL-CHS	ABM	HUMSS	TVL-Ckry	STEM	TVL-FBS	GAS	C-Mean
1	Self-Regulated Learning	2.67 c	2.61 c	2.35 mc	2.35 mc	2.61 c	2.44 mc	2.36 mc	2.24 mc	2.47 mc
2	Enlisting Social Resources	2.52 mc	2.67 c	2.39 mc	2.42 mc	2.74 c	2.45 mc	2.35 mc	2.12 mc	2.46 mc
3	Enlisting Par. and Comm. Support	2.67 c	2.58 mc	2.65 c	2.66 c	2.11 mc	2.33 mc	2.39 mc	2.14 mc	2.44 c
4	Academic Achievement	2.48 mc	2.65 mc	2.51 mc	2.22 mc	2.44 mc	2.24 mc	2.07 mc	2.32 mc	2.37 mc
5	Meet Others' Expectations	2.18 mc	2.26 mc	2.18 mc	2.12 mc	2.05 mc	2.03 Mc	1.69 nc	1.94 mc	2.06 c
6	Self-Assertive Efficacy	2.19 mc	2.10 mc	2.17 mc	2.21 mc	1.80 nc	2.01 mc	1.47 mc	1.86 mc	1.98 c
7	Social Self-Efficacy	2.23 mc	1.93 mc	1.59 nc	1.66 nc	1.85 mc	1.64 nc	1.55 nc	1.45 nc	1.74 nc
8	Self-Regulatory Efficacy	1.84 mc	1.77 nc	1.50 nc	1.53 nc	1.73 nc	1.43 nc	1.73 nc	1.33 nc	1.61 nc
	R-Mean	2.35 mc	2.32 mc	2.18 mc	2.15 mc	2.17 mc	2.07 mc	1.95 mc	1.93 mc	2.14 MC

Source: Camara (2018) Table 2 of published article in Asian J. of Mul. Stu., except C-Mean and R-Mean
Legend: Very Highly Confident, VHC (4.20-5.00); Highly Confident (3.41-4.20); Confident (2.61-3.40); Moderately Confident (1.81-2.60); Not Confident (1.00-1.80)

Table 1 reveals that the 2016 cohort are most confident in terms of their Self-Regulated Learning (M=2.57, Moderately Confident) and are least confident in terms of Self-Regulatory Efficacy (M=1.67, Moderately Confident). Self-Regulated Learning consists of indicators that include finishing homeworks by deadlines, getting oneself to study before doing other interesting things to do, concentrating on schoolworks, using the library to get information, taking good notes, arranging a place to study without distractions, planning schoolwork for the day, and remembering well information presented in class. Self-Regulatory Efficacy consists of indicators that include resisting pressure from skipping school, smoking cigarettes, drinking beer, wine or liquor, controlling one's temper, and resisting pressure to get oneself in trouble in the school.

Undergraduates showed 'High Level' of Confidence on Self-Efficacy Even During Pandemic

In 2020, the Philippine Government disallowed in-person classes. Schools either closed temporarily or continued classes in a flexible learning modality, mostly done online to arrest the further spread of the COVID-19 declared as pandemic by WHO in 2020. This COVID-19 is considered a checkpoint in the curriculum as it disrupted the normal delivery of instruction, especially in the undergraduate classes. By 2022, the self-efficacy of undergraduate students was determined using a sample of pre-service teacher in a state university in Pangasinan, Philippines. This sample now referred to as cohort 2022 has confidence levels reported in Table 2.

Table 2. Summary on Reported Mean Levels of Confidence of Cohort 2022 (n=990)

No	Area	Sci n=147	Fil n=161	Eng n=162	Soc Stud n=155	BTLEd n=223	BTVTED n=142	C-Mean
1	Social Self-Efficacy	4.54 vhc	4.58 vhc	4.54 vhc	4.54 vhc	4.59 vhc	4.51 vhc	4.55 vhc
2	Academic Achievement	4.10 hc	4.50 vhc	4.27 vhc	4.26 vhc	4.46 vhc	4.23 vhc	4.30 vhc
3	Self-Assertive Efficacy	4.14 hc	4.25 vhc	4.10 hc	4.06 hc	4.30 vhc	4.16 hc	4.17 hc
4	Self-Regulatory Efficacy	4.20 vhc	4.23 vhc	4.19 hc	4.07 hc	4.11 hc	4.01 hc	4.14 hc
5	Self-Regulated Learning	4.03 hc	4.21 vhc	4.02 hc	3.94 hc	4.17 hc	3.99 hc	4.06 hc
6	Meet Others' Expectations	3.99 hc	4.20 vhc	3.94 hc	3.92 hc	4.24 vhc	4.01 hc	4.05 hc
7	Enlisting Social Resources	3.75 hc	4.12 hc	3.90 hc	3.63 hc	4.16 hc	3.97 hc	3.92 hc
8	Enlisting Par. and Comm. Support	3.02 c	3.25 c	3.13 c	2.72 c	3.49 hc	3.25 c	3.14 c
	R-Mean	3.97 hc	4.17 hc	4.01 hc	3.89 hc	4.19 hc	4.02 hc	4.04 HC

Legend: Very Highly Confident, VHC (4.20-5.00); Highly Confident (3.41-4.20); Confident (2.61-3.40); Moderately Confident (1.81-2.60); Not Confident (1.00-1.80)

Table 2 reveals that cohort 2022 are most confident in Social Self-Efficacy (M=4.55, Very Highly Confident) and are least confident in Enlisting Parental and Community Support (M=3.14, Confident). Social Self-Efficacy consists of indicators that include making and keeping friends of the opposite and same sex, carrying on with conversation with others, and working well in group. Enlisting Parental and Community Support consists of indicators that include getting parents, brothers, sisters to help them with problems and in participating in school activities, including their ability to get people outside the school to take an interest in the activities of the school.

Difference in Reported Self-Efficacy is Significant for Major and Field of Specialization

The data for both cohorts (2016 and 2022) were subjected to statistical analysis to identify whether the difference is significant ($\alpha=0.05, 0.01$) or not in terms of strand (cohort 2016) or field of specialization (cohort 2022). Results are reported in ANOVA table in Table 3. Further, general weighted means for both cohorts were subjected to t-Test independent samples to identify whether the difference is significant ($\alpha=0.05, 0.01$) or not. A t-Test report is displayed in Table 4.

Table 3. ANOVA Tables for Cohorts 2016 and 2022
(Cohort 2016), 0.05, 0.01

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	6.648244	7	0.949749	42.77633	9.91E-19	2.203232
Columns	1.320969	7	0.18871	8.499417	8.93E-07	2.203232
Error	1.087931	49	0.022203			
Total	9.057144	63				

(Cohort 2022), 0.05, 0.01

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	7.040615	8	0.880077	97.06532	9.72E-24	2.18017
Columns	0.600993	5	0.120199	13.25692	1.23E-07	2.449466
Error	0.362674	40	0.009067			
Total	8.004281	53				

Table 4. t-Test of Independence
t-Test: Two-Sample Assuming Equal Variances

	Variable 1	Variable 2
Mean	2.14125	4.04125
Variance	0.118155357	0.168498214
Observations	8	8
t Stat	-10.03736959	
P(T<=t) one-tail	4.45972E-08	
t Critical one-tail	1.761310136	
P(T<=t) two-tail	8.91945E-08	
t Critical two-tail	2.144786688	

Table 3 reported that there is a significant difference between the strand means for cohort 2016 ($\alpha < 0.01$). This means that students in the K to 12 strands had different levels of confidence in the indicators of self-efficacy. A significant difference is reported as well between the specialization means for cohort 2022 ($\alpha < 0.01$). Similarly, this means that undergraduates in various specializations had different levels of confidence in the indicators of self-efficacy. Further, Table 4 revealed a significant difference between the 2016 and 2022 general weighted means ($\alpha < 0.01$). This means that the cohort 2022's is significantly higher than that of its cohort 2016 counterpart ($\alpha < 0.01$, one-tail), and this is not due to chance.

Enlisting Parental and Community Support generally received lowest mean confidence

Table 5. Indicators of Self-Efficacy receiving the Top 5 Lowest Mean Confidence

No	Indicator	M	SD	R
1	I could get my parents to take part in school activities.	2.80	1.34	1
2	I could get my brother/s and sister/s to help me with a problem.	3.16	1.28	2
3	I could use the library to get information for class assignments.	3.18	1.11	3
4	I could get my parents to help me with a problem.	3.24	1.20	4
5	I could get people outside the school to take an interest in my school.	3.40	1.14	5

Note: Though receiving the Top 5 lowest mean values, the M are interpreted as Moderately Confident.

DISCUSSION OF FINDINGS

This study explored on the self-efficacy of undergraduate students in the Philippines using Bandura's aspects of self-efficacy at a time when two societal checkpoints are potentially disrupting their confidence in learning, i.e. implementation of K to 12 BEC in 2016 and the effects of COVID-19 pandemic since 2020, both of which make this batch of study's respondents a cohort in a span of six years.

Fundings have revealed empirical evidence that the self-efficacy of the undergraduate students significantly increased compared with their results six years ago, this could be due to other factors that (Li et al., 2018; Arslan, 2021) could have mediated including maturity and motivation, but this study would like to point out that COVID-19 did not negatively affect or was not able to lower down their level of confidence as an adult learner. This finding suggests that the flexible learning modality implemented by universities worldwide, though beset with several issues and challenges at the onset, could be sustained in the perspective of the adult's perception in learning. This finding, of course, should coincide with the efforts of universities for provisions of support in learning management system and even in infrastructure.

The study on global self-esteem across life span of Robins et al. (2002) could convince as that self-efficacy i.e. in this study, increased self-efficacy in adult learners, is not merely due to maturity or because of greater self-control. Robins et al. (2002) wrote that most research on self-esteem development has focused on the transition from childhood to adolescence, and while several studies have found increases in self-esteem during this transition, other studies reported declines. This, to us, suggests that self-esteem and by extension self-efficacy does not hold a pattern, and is subjected through several factors in the lives of the individuals involved. While this study does not claim to explain how or why the adult learners ($n=990$) increased in self-efficacy, it pointed out in particular that COVID-19 did not lower it down, which could have been a potential occurrence following the conclusion of Robins et al. on declining self-esteem.

The finding of [Lopez and Tuz \(2021\)](#) among 304 freshmen college students in a private higher education in the Philippines on their respondents' high self-efficacy support the findings of this study among 990 undergraduate students, but in a public higher education institution, still in the Philippine setting. This implies that self-efficacy is a popular and significant metrics in understanding the kind of learners of these contemporary times, as Lopez and Tuz attempted to correlate it further with academic motivation. In this present study, academic achievement is a component of self-efficacy measured which reported a mean of 4.30 which is interpreted as very highly confident. Similar study of [Yapo and Tus \(2021\)](#) supports the finding on high self-efficacy among graduating Filipino students (n=532).

This study revealed that 'Enlisting Parental and Community Support' received the lowest mean confidence among the eight areas of self-efficacy measured is consistent with the findings of [Pasana et al. \(2020\)](#) among engineering and fisheries technology students in a public state university in Pangasinan, Philippines (n=532). In the perspective of parents as respondents, [Xue et al. \(2021\)](#) reported that new parents experienced lower parenting self-efficacy during the COVID-19 lockdown. Similar finding is found by [Bermundo et al. \(2021\)](#) among young social educators in Pangasinan, Philippines.

Contrary, however, to the presented data in this study ([Camara, 2018c](#)) on cohort 2016 showing moderate confidence of the senior high school students, the study of [Tuz \(2020\)](#) reported of high confidence among the senior high school students in Bulacan, Philippines (n=190). The study conducted by the former had the data collected in 2016 when the K to 12 BEC has just started while the former collected data in 2019. This could be due to the acclimatization of senior high school students with the processes and mechanisms of K to 12 since when data were collected, it was already four years of the K to 12 BEC implementation. In the study of [Rahon et al. \(2020\)](#) while revisiting the research competencies of then-K to 12 students claimed that the increased self-efficacy in research of college students could be due to the advanced subjects in research taken as part of the curriculum implemented in senior high school, which implies that any positive increment in students' self-efficacy could be attributed to their experiences in the K to 12 BEC. Furthermore, in the study of [Camara \(2020b\)](#), engineering students claimed that K to 12 has prepared them for their college life.

IMPLICATIONS TO LEARNING IN HIGHER EDUCATION

In its Executive Summary entitled 'Reimagining our Futures Together: A New Social Contract for Education', the International Commission on the Futures of Education ([UNESCO, 2021](#)) espoused on three essential questions as we look to 2050: What should we continue doing? What should we abandon? What needs to be creatively invented afresh? In its aim to compare and contrast between past promises and uncertain futures of education, UNESCO through the ICFE advanced the idea that a new social contract for education needs to allow us to think differently about learning and the relationship between students, teachers, knowledge, and the world. This study suggests that flexible learning modality could be sustained by higher education institutions. This suggestion is in the perspective of whether or not the COVID-19 pandemic lowered down the self-efficacy of college students and thereby their potential productivity, which is not supported by the study's findings. Sustained flexible instruction is possible but further studies on the HEI's readiness is warranted.

Further, this is in support to the Sustainable Development Goals for 2030 which provides for Agenda No. 4 that aims to ‘ensure inclusive and equitable, quality education and promote lifelong learning opportunities for all’. This means that education needs to be sustained in all levels and through a lifetime in all learning opportunities possible. Quality education is not a one-time process, nor is it a unidirectional mechanism. If the flexible learning modality implemented to arrest the further spread of the COVID-19 pandemic will be stopped, students who have taken advantage of this program for whatever reason or those whose self-efficacy are at its best for online learning, will be affected. There may be a difficulty for them to unlearn their adaptation to the online learning which they went through for two years now. Periodic assessment of its implementation is necessary, especially on its flexible and non-flexible elements (Camara, 2022a) or even experiences of teachers in modular instruction (Nacar & Camara, 2021). In the case of the Philippines, the secretary of the Commission on Higher Education claimed that flexible learning will be sustained in higher education even during the post-pandemic period.

LIMITATIONS

This study did not include empirical data which could limit the generalizability of the findings. The use of empirical data in self-efficacy studies, however, is very limited because of the complexity on the scope and boundary of this aspect. No consensus is available on empirical metrics since self-efficacy started as a form of belief and does not warrant an evidence-based confirmation.

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