

TAX EDUCATION AND TAX AWARENESS: A STUDY ON THE PAJAK BERTUTUR INDONESIAN TAX EDUCATION PROGRAM

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ABSTRACT

This study aimed to examine the effectiveness of 'Pajak Bertutur', a tax education program in Indonesia. We analysed whether there were differences in students' tax awareness before and after the program, and whether the results of the program were influenced by students' familiarity with taxation. We distributed an online survey questionnaire to all students participating in the 2020 tax education program, resulting in a total of 693 responses, 461 for pre-survey and 232 for post-survey. Using multivariate regression analysis, our results suggest that students' tax awareness levels increased after the tax education program. We also found that the increase in tax awareness was greater for students who are familiar with the tax authority website and those who have learned about taxation before the event. Therefore, these findings indicate that the effectiveness of the tax education program is influenced by the students' prior knowledge and emphasising that a continuous tax education program is necessary to improve tax awareness.

Keywords: tax education, tax awareness

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I INTRODUCTION

Taxes are the major source of revenue for the Government of Indonesia. On average, tax revenues contribute around 85% of the total government revenue. Despite this great reliance on taxes, the Indonesian tax ratio remains very low. Based on the Organisation for Economic Co-Operation and Development's ('OECD') 2020 report, the Indonesian tax ratio of 11.9 per cent is the lowest among countries located in the Asia and Pacific region.¹ Relevantly, the Indonesian tax ratio is lower when compared to neighbouring countries, such as Malaysia (12.2%), the Philippines (15.7%), or Thailand (16.5%).² Accordingly, raising the tax ratio becomes a priority in the Indonesian medium-term fiscal policy system.

Raising a tax ratio has indeed been a problem in most developing countries. Prior studies suggest that to raise tax revenues, governments in developing countries should not focus only on detection and punishment, but also on improving the actual motivations of people to pay taxes.³ Strengthening the social norms is viewed as important as the efforts to improve the tax administration.⁴ Efforts to improve the intrinsic motivation to pay taxes thus are essential to increasing tax compliance.⁵

Prior studies suggest that positive attitudes towards taxation are associated with tax knowledge — a higher level of tax knowledge is associated with more positive attitudes towards taxation.⁶ Similarly, it is suggested that people are more likely to comply with tax laws if they have sufficient knowledge of taxation.⁷ On this point, Kwok and Yip argue that a lack of understanding of the tax law and its application can lead to non-compliant behaviour.⁸ Accordingly, these prior studies stress the importance of tax education, which

¹ Organisation for Economic Co-Operation and Development (OECD), *Revenue Statistics in Asian Pacific Economies 2020* (OECD Publishing, 2020) <<https://doi.org/10.1787/d47d0ae3-en>>.

² Ibid.

³ James Alm and Jorge Martinez-Vazquez, 'Tax Morale and Tax Evasion in Latin America' (Working Paper No 07-32, International Studies Program, Andrew Young School of Policy Studies, Georgia State University, December 2007) <<https://icepp.gsu.edu/files/2015/03/ispwp0732.pdf>>.

⁴ Ibid.

⁵ James Andreoni, Brian Erard and Jonathan Feinstein, 'Tax Compliance' (1998) 36(2) *Journal of Economic Literature* 818; Benno Torgler and Friedrich Schneider, 'What Shapes Attitudes Toward Paying Taxes? Evidence from Multicultural European Countries' (2007) 88(2) *Social Science Quarterly* 443.

⁶ Knut Eriksen and Lars Fallan, 'Tax Knowledge and Attitudes Towards Taxation: A Report on a Quasi-Experiment' (1996) 17(3) *Journal of Economic Psychology* 387; Pauline Niemiowski, Steve Baldwin and Alexander J. Wearing, 'Tax Related Behaviours, Beliefs, Attitudes and Values and Taxpayer Compliance in Australia' (2003) 6(1) *Journal of Australian Taxation* 132.

⁷ Jeyapalan Kasipillai, Norhani Aripin and Noor Afza Amran, 'The Influence of Education on Tax Avoidance and Tax Evasion' (2003) 1(2) *eJournal of Tax Research* 134; Adrian Furnham, 'Understanding the Meaning of Tax: Young Peoples' Knowledge of the Principles of Taxation' (2005) 34(5) *The Journal of Socio-Economics* 704.

⁸ Betty Yuk Sim Kwok and Rita Wing Yue Yip, 'Is Tax Education Good or Evil for Boosting Tax Compliance? Evidence from Hong Kong' (2018) 32(4) *Asian Economic Journal* 359.

is paramount to developing tax knowledge.⁹ In a study looking at university students' level of tax knowledge, Putro and Tjen find a substantial difference in tax knowledge between students who have received tax education and students who have not.¹⁰ The importance of tax education is also proposed by other studies. For example, Morgan and Castelyn found that a majority of the participants in their study agreed that formal tax education should be introduced into the secondary school curriculum and, as a corollary, would assist taxpayers in their interactions with Australia's taxation system.¹¹ Similarly, Sarker explains that the Japanese government has introduced tax education to school students because they are considered to be potential future taxpayers.¹² Furthermore, Barjoyai emphasises that all future taxpayers need to have an adequate tax education in schools or colleges so that they are more tax conscious when they grow up.¹³

Our study is intended to analyse the tax education program in Indonesia. In 2014, as part of an effort to increase the tax ratio, the Indonesian government established a Tax Education program, known as the Tax Awareness Inclusion program. This program primarily aims to build tax awareness amongst young people, targeting students in all levels of education, including elementary schools, middle schools, high schools and universities. One of the flagships in the Tax Awareness Inclusion program is the annual 'Pajak Bertutur ('Patur')'¹⁴ program, which was established in 2017. The Patur program involves a one-day visit from tax officials to schools during which the tax officials deliver various educational activities related to tax awareness to students. Since the program targets tax awareness, the educational materials include a basic understanding of taxes, the importance of taxes in the Indonesian economy, and how taxes contribute to enhancing the quality of life of citizens. It is expected that the program will increase students' awareness as well as build a positive attitude towards taxation among students, who will be future taxpayers.

Despite the Patur program having been held annually since 2017, whether and to what extent the program improves students' tax awareness is still widely unknown. There is also limited literature discussing a country's tax education program. It is the authors' understanding that only Sarker¹⁵ has explained the tax education of school students in Japan. Similarly, research analysing the association between tax education and tax

⁹ Ming Ling Lai, Yaacob Zalilawati, Mahat Mohd Amran and Kwai Fatt Choong, 'Quest for Tax Education in Non-Accounting Curriculum: A Malaysian Study' (2013) 9(2) *Asian Social Science* 154.

¹⁰ Bernardus Bayu Ryanto Prakoso Putro and Christine Tjen, 'Analysis of Tax Education and Tax Knowledge: Survey on University Students in Indonesia' (2020) 15(1) *Journal of the Australasian Tax Teachers Association* 232.

¹¹ Annette Morgan and Donovan Castelyn, 'Taxation Education in Secondary Schools' (2018) 13(1) *Journal of the Australasian Tax Teachers Association* 307.

¹² Tapan K. Sarker, 'Improving Tax Compliance in Developing Countries via Self-Assessment Systems – What Could Bangladesh Learn from Japan?' (2003) 9(6) *Asia-Pacific Tax Bulletin* 1.

¹³ Bardai Barjoyai, 'Tax Illiteracy in Malaysia: Problems and Solution' (1992) 11(2) *ACCAMADIA, Journal of School of Accountancy, MARA Institute of Technology* 6.

¹⁴ The general English translation of the term Pajak Bertutur is 'Tax Speaks'.

¹⁵ Sarker (n 12).

awareness is also limited. These prior studies also do not specifically analyse a national tax education program. Accordingly, it is this lack in prior research and the importance of tax education programs in a developing country that motivates the authors to examine the effectiveness of the Patur program in Indonesia. The authors conducted two broad analyses. First, the authors analysed whether there is a change in students' tax awareness after the program. If the program meets its objectives, a higher student tax awareness should be observed after the program. Second, the authors analysed whether the results of the program would be influenced by students' familiarity with taxation. Despite its role in every country's economy, tax is a complex subject. Thus, students would develop their understanding of taxation gradually. It is the authors conjecture that it would be easier for students with familiarity in taxation to understand the information in the tax education program. More specifically, the authors asked whether the impact of the program would be more prominent if the students were familiar with taxation. Students' familiarity with taxation was measured by assessing (1) whether the student has ever received any taxation lesson(s), (2) whether the student is aware of the tax authority website, and (3) whether the student has a family member that understands taxation.

In answering the research questions, the authors utilised a survey that was distributed to all participants of the Patur program before and after the program in 2020. Information was also collected regarding students' demographics and their access to taxation information. Due to the COVID-19 pandemic, the 2020 Patur program was conducted virtually via Zoom video conferencing software. The use of online platforms limits our sample to students who had adequate access to technology. However, despite this sample limitation, there was enough variation in students' characteristics that we used to observe the impact of the program.

Confirmatory factor analysis ('CFA') was used in the structural equation modelling to measure the tax awareness variable. A multivariate regression analysis was then applied to measure the changes in tax awareness before and after the Patur program. Finally, a difference-in-differences setting was adopted to test whether students' familiarity with taxation moderates the changes in students' awareness after the program.

The empirical results of this study indicate that there is a significant difference in students' tax awareness before and after the Patur program. It was also found that the increase in tax awareness is greater for students who are familiar with the tax authority website and students that have learned about taxation prior to the program. Our results thus indicate that the effectiveness of the tax education program is affected by the students' familiarity with taxation, implying that a continuous education program is necessary to increase tax awareness.

This paper continues with a review of the relevant literature on tax education and tax awareness and an explanation of the Indonesian tax education program. The paper then proceeds to describe the study's data, research design, and descriptive statistics, prior to exploring the empirical results and findings. Finally, a conclude is provided that discusses these findings and future research direction.

II PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

A Tax Education and Tax Awareness

In a self-assessment system, taxpayers have responsibilities to calculate, pay, and report their taxes to the government.¹⁶ The inability to fulfill these responsibilities properly will be detected as a failure, and the tax authority will take necessary actions, such as imposing penalties based on the tax laws.¹⁷ Thus, taxpayers should be aware of their tax obligations and should be knowledgeable to comprehend the applicable tax laws.¹⁸ Since knowledge of taxation is essential, the tax authority is responsible to provide taxpayers with education and assistance so that taxpayers can understand and apply the relevant tax laws.¹⁹ It is argued that providing a tax education program is an essential feature of the self-assessment system.²⁰

Prior studies support the importance of tax knowledge and tax education in achieving tax compliance. It is found that tax knowledge positively correlates with positive attitudes towards taxation.²¹ It is also suggested that people who earn taxable income are more likely to comply with tax laws if they have sufficient knowledge of taxation.²² Moreover, Kwok and Yip argue that a lack of understanding of the tax law and its application can lead to non-compliant behaviour.²³ Thus, tax education is essential to provide tax knowledge, as supported by Kurniawan who finds that tax education increases tax knowledge.²⁴ Besides, Morgan and Castelyn state that the level of tax education obtained by taxpayers is an important factor that contributes to the understanding of taxation requirements.²⁵ Thus, tax education can lead to tax compliance. This is supported by Kwok and Yip who find that tax education positively impacts tax compliance.²⁶ It is suggested that tax

¹⁶ Andrew Okello, 'Managing Income Tax Compliance Through Self-Assessment' (Working Paper No WP/14/41, International Monetary Fund, March 2014) <<https://www.imf.org/external/pubs/ft/wp/2014/wp1441.pdf>>.

¹⁷ Ibid.

¹⁸ Ern Chen Loo and Juan Keng Ho, 'Competency of Malaysian Salaried Individuals in Relation to Tax Compliance Under Self Assessment' (2005) 3(1) *eJournal of Tax Research* 45.

¹⁹ Ern Chen Loo, Margaret McKerchar and Ann Hansford, 'An International Comparative Analysis of Self Assessment: What Lessons Are There for Tax Administrators?' (2005) 20(4) *Australian Tax Forum* 669; Okello (n 16).

²⁰ Loo, McKerchar and Hansford (n 19).

²¹ Eriksen and Fallan (n 6); Niemirowski, Baldwin and Wearing (n 6).

²² Kasipillai, Aripin and Amran (n 7); Furnham (n 7).

²³ Kwok and Yip (n 8).

²⁴ Dedi Kurniawan, 'The Influence of Tax Education During Higher Education on Tax Knowledge and Its Effect on Personal Tax Compliance' (2020) 35(1) *Journal of Indonesian Economy and Business* 57.

²⁵ Morgan and Castelyn (n 11).

²⁶ Kwok and Yip (n 8).

education can instil tax compliance behaviour, especially through improving the ability/readiness to comply and enhancing morality.²⁷

Tax education should not only target people who have registered as taxpayers, but also those who have yet become taxpayers. Morgan and Castelyn suggest that tax education should be given to students in secondary education,²⁸ while Bahari and Ling propose that university students, regardless of their discipline, should also be exposed to tax education.²⁹ Moreover, Putro and Tjen find that there is a significant difference in the level of tax knowledge between students who have received tax education and those who have not.³⁰

Further, the implementation of tax education for students can probably be influenced by many factors, including the characteristics of the students. Furnham, who conducted interviews with children ranging from 10 to 15 years old, finds that the knowledge of taxation increases with age.³¹ However, Furnham finds that the majority of the 15-year old's still do not have full comprehension of the questions, suggesting that young people probably do not completely comprehend how their country's tax system functions until they are in their late teenage years.³² In addition, Furnham also finds that children from poorer families have more understanding about how the government spends its tax revenues, because their parents may have discussed the taxation issue more and are more likely to be recipients of the government support.³³ This implies that family background may affect the tax knowledge of students.

Our study focuses on examining tax awareness that is one type of tax knowledge, according to Bornman and Ramatumbu's framework.³⁴ Bornman and Ramatumbu propose a framework of tax knowledge since the term 'tax knowledge' has not been well defined in the taxation literature.³⁵ The framework describes that tax knowledge consists of three categories, namely general tax knowledge, legal tax knowledge, and procedural tax knowledge.³⁶ General tax knowledge relates to having a fiscal awareness, which includes the understanding of the aims of governmental fiscal strategies and having financial literacy. Legal tax knowledge is defined as understanding legislative provisions, which includes understanding how people are taxed (technical) and understanding the

²⁷ Ibid.

²⁸ Morgan and Castelyn (n 11).

²⁹ Anis Barieyah Mat Bahari and Lai Ming Ling, 'Introducing Tax Education in Non-Accounting Curriculum in Higher Education: Survey Evidence' (2009) 7(1) *Journal of Financial Reporting and Accounting* 37.

³⁰ Putro and Tjen (n 10).

³¹ Furnham (n 7).

³² Ibid.

³³ Ibid.

³⁴ Marina Bornman and Pushetso Ramutumbu, 'A Conceptual Framework of Tax Knowledge' (2019) 27(6) *Meditari Accountancy Research* 823.

³⁵ Ibid.

³⁶ Ibid.

terminology of the complex tax legislation (conceptual). Procedural tax knowledge relates to understanding tax compliance procedures. Although Bornman and Ramatumbu suggest these three elements of tax knowledge, the importance of each element as a factor influencing tax compliance is not examined, and they suggest future studies to investigate this to further enhance the framework.³⁷ It is also suggested that not only should tax education provide technical and procedural tax knowledge, but it should also be able to increase awareness to ensure a voluntary compliant attitude.³⁸

Nevertheless, many prior studies seem to use the terms 'tax knowledge' and 'tax awareness' interchangeably, which is probably due to the unclear definition of both terms. In the context of this study, we use the term 'tax awareness' to correspond with the main purpose of Indonesia's Patur program, which is to raise awareness of young people towards taxation. Following Bornman and Ramatumbu's (2019) framework, we argue that the term 'tax knowledge' is too general and less appropriate for the context of this study, because Patur program does not cover technical and procedural aspects of taxation.

B Tax Education Program in Indonesia

Indonesia's Directorate General of Taxes ('DGT') has implemented a tax education program, named Tax Awareness Inclusion, since 2014. This program primarily aims to build tax awareness of young people, targeting students in all levels of education, including elementary schools, middle schools, high schools, and universities. Through this program, students are expected to have more awareness of taxation, so they can be compliant taxpayers in the future. The DGT has created a long-term roadmap for the program in building tax awareness in Indonesia. According to the roadmap, it is expected that Indonesian citizens will have a high level of tax awareness after 2060, and taxes will contribute to the optimal welfare for Indonesian citizens.³⁹

The main objective of the Tax Awareness Inclusion program is to introduce taxation to students as early as possible, starting from the elementary school up until college. For the college student education, the Indonesian Tax Authority works with colleges and universities to integrate taxation discussion into their curriculum. For the K-12 students, the Tax Awareness Inclusion program includes integrating taxation in the national curriculum and providing materials/books discussing the taxation concepts. For these activities, the Indonesian Tax Authority works with the Ministry of Education and the efforts are currently still in progress. Aside from the national-wide program to insert taxation concept into K-12 education system, the DGT also organises some supporting programs. One of the regular and well-known programs is the Patur program, which is a campaign of the Tax Inclusion Awareness Program in Indonesia. In the Patur program, the tax offices visit schools in their region to introduce taxation by delivering tax-related materials to students. As the main objective of Patur program is to build tax awareness of students, the materials focus on providing general knowledge about taxation and do not

³⁷ Ibid.

³⁸ Ibid.

³⁹ Directorate General of Taxes, *Inklusi Kesadaran Pajak dalam Pendidikan* (Directorate General of Taxes, 2020) <https://edukasi.pajak.go.id/images/materi_publicasi/Booklet-Inklusi-Kesadaran-Pajak.pdf>.

include topics related to procedural or technical aspects of taxation (e.g., how to calculate taxes). The main purpose of the materials is to promote positive perceptions of the students towards taxation, such as how taxes are used to finance public infrastructure that is used by the students and their families. These materials are delivered by the tax offices using various methods, such as active lecturing, video presentation, and educational games. Both teaching materials, and delivery methods, were prepared by adjusting with the student's level of education (i.e., elementary schools, middle schools, high schools), so the materials could be understood better by students at a particular level of education.

The Patur program is conducted under the philosophy that students, as a young generation, need to be instilled with positive values, which include an understanding of taxation. By participating in this event, it is expected that students can have a greater awareness of taxation, which is important in building their positive attitudes towards taxation. In the first three years (2017-2019), the events were conducted offline, where the DGT visits schools and universities. However, the 2020 event was conducted virtually by Zoom video conferencing due to the COVID-19 pandemic.

Despite the event has been conducted annually since 2017, the effectiveness of the program is still widely unknown. To the best of our knowledge, no research has investigated whether and to what extent the program improves the tax awareness of students. Thus, this motivates us to examine whether providing tax education through the Patur program can increase students' tax awareness.

C Hypothesis Development

The primary aim of this study is to investigate whether tax education, which is in the form of the Patur program, changes the tax awareness of students. Eriksen and Fallan suggest that tax knowledge can shape people's positive attitudes towards taxation.⁴⁰ In addition, Kurniawan finds that tax education increases tax knowledge.⁴¹ This is also supported by Putro and Tjen who find that students who have received tax education tend to have more tax knowledge than students who have not been exposed to tax education.⁴² Kwok and Yip also find that tax education has a positive association with tax compliance.⁴³ Thus, by providing tax education, it is expected that tax awareness can increase, which can ultimately affect tax compliance. Therefore, the first hypothesis for this study is as follows.

H1: The tax education program improves students' awareness of taxation.

To further enhance this study, we also examine whether students' familiarity with taxation has impact on how the tax education program improves their tax awareness. We analyse three conditions to describe students' familiarity with taxation: (1) whether a student has received any taxation lesson prior to the tax education program, (2) whether a student is aware of the tax authority website, and (3) whether a student has a family

⁴⁰ Eriksen and Fallan (n 6).

⁴¹ Kurniawan (n 24).

⁴² Putro and Tjen (n 10).

⁴³ Kwok and Yip (n 8).

member that understands taxation. We hypothesise that the impact of the tax education program on improving tax awareness will be higher for students with better familiarity with taxation as measured by the access to these three sources of information. Thus, the next hypotheses are as follows.

H2: The impacts of the tax education program on increasing students' tax awareness are higher for students with prior lessons on taxation.

H3: The impacts of the education program on increasing students' tax awareness are higher for students who have awareness of the tax authority website.

H4: The impacts of the tax education program on increasing students' tax awareness are higher for students whose family member(s) understand taxation.

III RESEARCH METHOD

A Sample

1 Overall Sample

We surveyed students who participated in the 2020 Patur event. We received a total of 693 responses, 461 responses were collected before the event and 232 responses were collected after the event. The demographic characteristics of our sample are shown in Table 1.

TABLE 1: DESCRIPTIVE STATISTICS

VARIABLES	(1) N	(2) MEAN	(3) STD. DEV.	(4) MIN.	(5) MAX.
Male	693	0.278	0.449	0	1
High school	693	0.478	0.500	0	1
Has received taxation lesson	693	0.703	0.457	0	1
Know the existence of tax authority website	693	0.385	0.487	0	1
Has family that understand taxation	693	0.522	0.500	0	1

Based on the data from 693 responses, 27.8% of the responses are males. About 48% of the responses are from high school students, which also means 52% of the responses are from middle-school students. We asked the respondents whether they have received any lessons about taxation. About 70% of the responses acknowledged having received taxation lessons. We also asked our respondents their source of information about taxation. About 49% of responses acknowledged the existence of a tax authority website as the source of information, and around 52% of the responses stated they have family members who understand taxation.

2 Matching Sample

Based on the identifier in the questionnaire, we matched the responses from the same respondent before and after the event. We got 294 matched responses from 147

respondents. The demographic characteristics of the matched sample are shown in Table 2.

TABLE 2: DESCRIPTIVE STATISTICS — MATCHING SAMPLE

VARIABLES	(1) N	(2) MEAN	(3) STD. DEV.	(4) MIN.	(5) MAX.
Male	294	0.238	0.427	0	1
High school	294	0.412	0.493	0	1
Has received taxation lesson	294	0.670	0.471	0	1
Know the existence of tax authority website	294	0.306	0.462	0	1
Has family that understand taxation	294	0.568	0.496	0	1

Our matched sample consists of 23.8% males and 41.2% high school students. Sixty-seven% of the respondents acknowledged that they have received taxation lessons. About 30% of the respondents acknowledged the existence of a tax authority website as the source of information, and around 57% of the responses stated they have family members who understand taxation.

B Research Methodology

We distributed the same questionnaire to participants before and after the event. The questionnaire consists of six questions that measure tax awareness and five questions that measure the characteristics of the respondents. The questions are measured using a 1–4 Likert scale. A score of 1 represents highly disagree and a score of 4 represents highly agree. The questions were:

- Question 1 Tax is the main source of Indonesian government revenues
- Question 2 Government may enforce tax to all citizens
- Question 3 Everybody should pay tax on their income
- Question 4 Students do not need to pay taxes (reverse question)
- Question 5 Not paying taxes is a better attitude compared to stealing (reverse question)
- Question 6 Indonesian citizens benefit greatly from their tax payments

Since the tax awareness variable is a latent variable, we use confirmatory factor analysis ('CFA') in the structural equation modelling to measure the magnitude of the variable.

In the first analysis, we analyse whether students' tax awareness improves after the Patur event. Using the overall sample, we estimated a multivariate regression as follows:

$$\text{Tax Awareness}_{it} = \beta_0 + \beta_1 \text{Post} + \beta_2 \text{Male}_{it} + \beta_3 \text{High School}_{it} + \beta_4 \text{Lesson}_{it} + \beta_5 \text{Website}_{it} + \beta_6 \text{Family}_{it} + \beta_k \Sigma \text{Location}_{it} + \varepsilon_{it}$$

Variable Description:

Tax Awareness = Level of tax awareness, measured using confirmatory factor analysis of the six tax awareness questions

Post	=	Period after the tax event
Male	=	Whether the respondent is male
High School	=	Whether the respondent is a high school student
Lesson	=	If the respondent has received taxation lesson
Website	=	If the respondent identified tax authority website as a source of information about tax
Family	=	If the respondent identified family members as a source of information about tax
Location	=	Dummy variables showing the provinces where the respondent resides. The overall sample includes respondents from nine provinces.

We expect the coefficient of β_1 to be positive, which indicates the tax awareness post-event is higher than pre-event. Our analysis includes robust standard error to deal with heteroscedasticity.

Our second analysis evaluates whether the impact of the tax education program differs between respondents with different familiarity with taxation. For this analysis, we used the matched sample to control for unobservable characteristics of the respondents that might be associated with access to tax knowledge. To test the hypothesis, we use a difference-in-differences setting, as follows:

$$\text{Tax Awareness}_{it} = \beta_0 + \beta_1 \text{Post*Condition} + \beta_2 \text{Post} + \beta_3 \text{Male}_{it} + \beta_4 \text{High School}_{it} + \beta_5 \text{Lesson}_{it} + \beta_6 \text{Website}_{it} + \beta_7 \text{Family}_{it} + \beta_k \Sigma \text{Location}_{it} + \varepsilon_{it}$$

Variable Description:

Post*Condition = Interaction between Post (period after the event) and Condition (respondent's access to taxation knowledge)

We define 'Condition' as respondents' familiarity with taxation as measured by their access to tax knowledge, which is (1) whether the respondent has received any taxation lesson (Lesson), (2) whether the respondent is aware of the tax authority website (Website), and (3) whether the respondent has a family member that understands taxation (Family). Our coefficient of interest is β_1 that shows the tax awareness difference between respondents under condition X and other respondents after the event. A positive β_1 indicates a higher tax awareness after the event for respondents under condition X compared to other respondents, ceteris paribus. For example, if condition X is defined as whether a respondent has received a taxation lesson, the coefficient β_1 shows the tax awareness differences between respondent that has received taxation lesson and other respondents after the event. A positive β_1 indicates the impact of the tax education event is higher for respondents that have received taxation lessons. All of our analyses include robust standard error to deal with heteroscedasticity.

IV RESEARCH RESULTS

A Descriptive Analysis

Table 3 shows the summary of the tax awareness questions for all respondents. In general, our respondents have a positive tax awareness (most average score > 2). Question 6 (whether Indonesian citizens benefit greatly from their tax payments) has the highest average score, and question 4 (whether students need to pay taxes) has the lowest average score. We observed an increase in the average scores for questions 3, 4, 5, and 6, although none of the changes is statistically significant. We, however, observed a decrease in the average scores for questions 1 and 2.

TABLE 3: MEAN AND STANDARD DEVIATION OF TAX AWARENESS QUESTIONS — ALL SAMPLE

QUESTION	PARAMETER	PRE	POST	T-STAT
Question 1	Mean	3.062907	3.017241	0.871
	Std. Dev.	0.02971	0.044459	
Question 2	Mean	2.715835	2.681034	0.5492
	Std. Dev.	0.037473	0.049327	
Question 3	Mean	2.91974	2.952586	-0.625
	Std. Dev.	0.030866	0.04154	
Question 4	Mean	1.856833	1.969828	-1.8106
	Std. Dev.	0.035454	0.052691	
Question 5	Mean	2.516269	2.590517	-1.2015
	Std. Dev.	0.03628	0.04889	
Question 6	Mean	3.158351	3.181034	-0.456
	Std. Dev.	0.029412	0.038732	
N		461	232	

Our previous analysis shows the differences in the average score for all respondents. Next, using the matching sample, we analyse the average score of all questions. Our results in Table 4 shows an increase in scores after the event, although none of the changes is statistically significant.

TABLE 4: MEAN AND STANDARD DEVIATION OF TAX AWARENESS QUESTIONS — MATCHING SAMPLE

QUESTION	PARAMETER	PRE	POST	T-STAT
Question 1	Mean	2.993197	3.034014	-0.5759
	Std. Dev.	0.049691	0.050545	
Question 2	Mean	2.646259	2.687075	-0.4543
	Std. Dev.	0.066743	0.060133	
Question 3	Mean	2.884354	2.918367	-0.5194
	Std. Dev.	0.045807	0.046807	
Question 4	Mean	1.789116	1.891156	-1.1245
	Std. Dev.	0.061986	0.066271	
Question 5	Mean	2.55102	2.55102	0
	Std. Dev.	0.068385	0.059651	
Question 6	Mean	3.14966	3.183673	-0.5289

	Std. Dev.	0.047639	0.043193
N		147	147

B Regression Analysis

1 Tax Awareness Before and After the Tax Education Program

In our first analysis, we measure whether the tax awareness level changed after the tax education event. Our regression results involving the overall sample are shown in Table 5. The Post variable has a positive coefficient, which indicates the tax awareness level after the event is higher compared to before the event. This result is statistically significant at a 90% level of confidence.

The analysis of our control variables shows a meaningful association between some respondent characteristics and tax awareness. First, we found that high school students have higher tax awareness compared to junior high students. Second, we found that students that acknowledged that they have received taxation lesson have higher tax awareness compared to their peers. Lastly, we found that students who are familiar with the tax authority website have higher tax awareness compared to their peers. In sum, the results of our first analysis suggest that there is a significant difference in tax awareness before and after the event, and students' access to tax knowledge is associated with their degree of tax awareness.

TABLE 5: REGRESSION RESULTS — TAX AWARENESS BEFORE AND AFTER THE TAX EDUCATION PROGRAM

VARIABLES	(1) COEFFICIENTS
Post	0.303* (0.172)
Male	-0.232 (0.195)
High School	1.203*** (0.226)
Lesson	0.570*** (0.177)
Family	0.0297 (0.156)
Website	0.471** (0.184)
2. Location	-2.607*** (0.494)
3. Location	-0.726* (0.421)
4. Location	-0.310 (0.485)
5. Location	-0.579

	(0.526)
6. Location	-1.320***
	(0.405)
7. Location	1.265***
	(0.472)
8. Location	3.852***
	(0.472)
9. Location	-0.298
	(0.543)
Constant	15.83***
	(0.452)
Observations	693
R-squared	0.159
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

2 *The Impact of Tax Education Program on Tax Awareness Based on Students' Familiarity with Taxation Concept*

Next, using the matching sample, we analyse the impact of tax education events on tax awareness by taking into account students' familiarity with taxation. We hypothesise that students with greater familiarity with taxation (greater access to taxation information) will benefit more from the tax education event. The reason is tax involves complex knowledge that might require time for students to understand. Prior knowledge and familiarity with tax concepts thus affect the effectiveness of a tax education program.

The results of our analysis are shown in Table 6. Our variable of interest is Post*Condition. We identified three conditions that represent students' familiarity with taxation, which are (1) familiarity with tax authority website, (2) having learned about taxation, and (3) having a family member that understands taxation.

Column 1 shows the results for familiarity with the tax authority website. We found that the increase in tax awareness is greater for students that are familiar with the tax authority website compared to other students. Similarly, column 2 shows that the increase in tax awareness is greater for students that have learned about taxation compared to other students. We, however, do not find a significant result for students who identified family members as the source of information about taxation. In general, our results indicate that the effectiveness of the tax education program is affected by students' familiarity with taxation. Our results thus indicate that a tax education program should involve a sequence of lessons that gradually shape students' understanding and awareness of taxation.

TABLE 6: REGRESSION RESULTS — CROSS-SECTIONAL VARIATION IN STUDENTS' PRIOR TAXATION KNOWLEDGE

CONDITION	(1)	(2)	(3)
	WEBSITE	LESSON	FAMILY
Post*Condition	0.219** (0.0965)	0.153** (0.0744)	-0.115 (0.0775)
Post	-0.0177 (0.0400)	-0.0618 (0.0553)	0.111* (0.0631)
Male	-0.150*** (0.0523)	-0.138*** (0.0522)	-0.138*** (0.0523)
High School	0.151*** (0.0447)	0.153*** (0.0453)	0.151*** (0.0448)
Lesson	0.0508 (0.0391)	-0.0114 (0.0521)	0.0569 (0.0384)
Family	0.0701* (0.0393)	0.0831** (0.0390)	0.145** (0.0580)
Website	0.0377 (0.0601)	0.118*** (0.0450)	0.137*** (0.0445)
2. Location	-0.227** (0.0975)	-0.0363 (0.0956)	-0.147* (0.0832)
3. Location	0.134*** (0.0381)	0.135*** (0.0509)	0.131*** (0.0377)
4. Location	0.246*** (0.0757)	0.241*** (0.0790)	0.248*** (0.0733)
6. Location	-0.0607 (0.0542)	-0.0407 (0.0600)	-0.0350 (0.0507)
7. Location	0.358*** (0.0512)	0.306*** (0.0601)	0.352*** (0.0526)
9. Location	0.127 (0.0820)	0.139 (0.0881)	0.135 (0.0820)
Constant	-0.269*** (0.0631)	-0.277*** (0.0698)	-0.358*** (0.0677)
Observations	294	294	294
R-squared	0.211	0.204	0.200

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

V CONCLUSION AND FUTURE RESEARCH

Our study is intended to analyse 'Patur', a tax education program in Indonesia. As the Indonesian government has been struggling to increase the country's tax ratio, a national tax education program is considered a key solution. This education program targets school children as future taxpayers and is intended to increase the students' tax

awareness. In the long run, it is expected that tax awareness will be translated into tax compliance.

We conducted a pre- and post- survey on Patur program's participants in 2020. In our first analysis, we found that students' tax awareness levels changed after the Patur event. More specifically, we found that on average, students' tax awareness is higher after the Patur program. In our second analysis, we took into account students' access to taxation information to proxy students' familiarity with taxation. We found that the increase in tax awareness is greater for students that are familiar with tax authority website experience compared to other students. We also found the increase in tax awareness is greater for students that have learned about taxation compared to other students. In sum, our results indicate that the effectiveness of a tax education program will be affected by students' familiarity with taxation. Our results thus suggest that a continuous education program is necessary to increase tax awareness.

This study only focuses on the 2020 program that was conducted online. Further research can investigate the offline tax education program in the future to see whether there are any differences in the results between an online and an offline program. Moreover, the post-survey in this study was conducted right at the end of the event, while awareness can change over time. In order to investigate whether students' tax awareness changes since their participation in the tax education program, further studies may also conduct follow-up post-survey several months after the program. Furthermore, other than conducting survey, future studies may also employ other methods to examine students' tax awareness before and after a tax education program, such as interviews and focus group discussions. Although these methods might not be able to involve more participants than a survey, these methods allow researchers to explore students' views on taxation more deeply. On top of the above, further research also can be conducted on the broader context of the Indonesian Tax Awareness Inclusion program, whether in the primary level, secondary level, or university level of education. Lastly, this study focuses on the Indonesian tax education program. Further research discussing a comparison between the Indonesian tax education program and tax education programs in other countries would be beneficial to understand how different institutional setting affects the effectiveness of a tax education program. Future studies focusing on other countries would benefit tax educators and regulators to understand the variety of tax education program among countries.

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