**The Effect Of *Technological Pedagogical Content Knowledge* (Tpack) Approach In Pai Learning On Student Achievement Of Grade 11 Of SMA Negeri 1 Ponorogo**

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**ABSTRACT:** *Learning becomes more engaging when paired with approaches that are relevant to contemporary times. The advancement of technology requires educators to continuously develop their practices in line with current trends. Integrating technology into education is essential for enhancing student interest and improving academic achievement. One effective strategy in this regard is the TPACK (Technological Pedagogical Content Knowledge) approach, which incorporates the essential components of using technology in the learning process. This study aims to investigate the impact of the TPACK approach on student achievement in Islamic Religious Education at SMA Negeri 1 Ponorogo. The research focuses on two variables: the TPACK approach (variable X) and student achievement (variable Y). The research method employed is quantitative, utilizing a questionnaire to collect data, which will be analyzed using the SPSS application. The first step in the research involved identifying the population, which consisted of 11th-grade students at SMA Negeri 1 Ponorogo, totaling 324 students. After establishing the population, the sample was determined using the Slovin formula, resulting in a sample size of 80 students. The findings of this study were obtained through simple linear regression analysis. The results indicated an F value of 165.387 with a significance level of 0.000, which is less than the threshold of 0.05. Therefore, we conclude that there is a significant impact of the TPACK approach on student learning achievements.*

**ABSTRAK**: Pembelajaran akan terasa menarik ketika dipadukan dengan pendekatan-pendekatan yang relevan dengan perkembangan zaman. Adanya teknologi menuntut guru sebagai tenaga pendidik harus senantiasa berkembang mengikuti arus trend. Pengintegrasian pembelajaran dan teknologi menjadi salah satu kumci dalam meningkatkan minat serta peningkatan prestasi siswa. Penerapan pendekatan TPACK (*Technological Pedagogical Content Knowledge*) merupakan alternatif strategi dalam proses pembelajaran. Pendekatan TPACK memuat unsur yang diperlukan, yaitu pemanfaatan teknologi dalam pembelajaran. Penelitian ini ditujukan untuk mengetahui seberapa besar pengaruh pendekatan TPACK dalam pembelajaran mata pelajaran pendidikan agama Islam terhadap prestasi siswa di SMA Negeri 1 Ponorogo. Penelitian ini memiliki dua variabel, yaitu pendekatan TPACK sebagai variabel X dan prestasi siswa sebagai variabel Y. Metode penelitian yang digunakan dalam penelitian ini adalah kuantitatif. Penelitian kuantitatif dilakukan dengan mencari data menggunakan instrument angket yang kemudian akan diolah menggunakan aplikasi SPSS. Langkah pertama peneliti mencari populasi yang akan diuji, dalam penelitian ini populasi adalah siswa dan siswi kelas 11 SMA Negeri 1 Ponorogo sejumlah 324 anak. Setelah populasi sudah diperoleh, maka langkah selanjutnya adalah menentukan sampel dengan menggunakan rumus slovin dan diketahui sampel sejumlah 80 anak. Hasil dari penelitian ini diketahui bahwa, dari data yang dianalisis menggunakan analisa regresi linier sederhana menunjukkan hasil F hitung = 165,387 dengan tingkat signifikansi 0,000 lebih kecil dari nilai 0,05. Maka kesimpulannya ada pengaruh variabel pendekatan TPACK terhadap prestasi belajar.

**Keywords:** *TPACK Approach, PAI Subjects, Student Achievement.*

1. **INTRODUCTION (Calibri, 12 Bold)**

Islamic religious education (hereinafter called PAI), as component important in the system education, have role main in to form character, morality, and spiritual values of students. (Syam, 2017) . Islamic religious education does not only give understanding to religious teachings, but also guide student For internalize values faith, ethics, and not quite enough answer social (Hanik, 2022) . In the era of development technology information like now, education experience transformation significant. Technology become a factor the key that can change paradigm learning in a way comprehensive. Utilization technology in context education No only enrich source Power learning, will but also possible development method more learning​ interactive, dynamic and appropriate with demands of the times (Syafrin, 2023) .

The problems of Indonesian education are getting worse complex. With existence curriculum independence, teachers are required For more focus on development creativity, critical thinking, and skills 21st century on students (Syam, 2019) . Curriculum This give freedom to the teacher for designing a harmonious teaching model with need as well as the ability of each individual participant educate. So from that, the teacher must understand individual characteristics of students they in a way in depth and develop learning strategies that support development potential full every students. (Rahayu, 2022) .

Importance integration technology in education No only related with readiness student facing the digital era, but also with improvement quality learning and improvement access to information. Use technology can open door access to source Power online education, improving involvement students, and allows more learning​ interactive (Salsabila & Agustian, 2021) .

In achieving objective desired learning​ so need effort For integrate materials, pedagogy, and technology in order to create experience holistic and relevant learning​ for students. One of the solution For approach This is with use approach *Technological Pedagogical Content Knowledge.* Approach This look at material learning as the foundation that must be delivered with an attractive and relevant way with need participant educate (Amalia & Radiansyah, 2023) . Teachers as educator need own skills strong pedagogical, namely​ ability For design and deliver material learning with appropriate approach​ with style Study students (Hanik, 2022) .

In research conducted by Jilah​ Safitri, the TPACK approach has a number of superiority including 1) Learning that uses TPACK approach is capable increase understanding student in the learning process ; 2) The TPACK approach is able to increase spirit and intention student in learn ; 3) With use TPACK approach of students more active in​ class ; 4) The TPACK approach is also capable of to form attitudes and behavior student

State Senior High School 1 Ponorogo is one of from the amount school carry on level on excel in the Regency Ponorogo Already apply learning with *Technological Pedagogical Content Knowledge* (TPACK) approach. Therefore that, is very important For evaluate impact application TPACK approach in learning process teach eye Islamic Religious Education lessons on achievement Study participant educate class 11. Expected improvement performance Study No only covers understanding the concept of Islamic religion, but also the skills participant educate in manifest the value contained in learning eye lesson Islamic religious education in life daily.

1. **METHOD (Calibri, 12 Bold)**

In research this, researcher use method approach quantitative with look for influence between variable X and variable Y. Variables in study This namely, the TPACK approach as X variables and achievement student as variable Y. In a study quantitative there is object the usual research called with population, then collapsed become A the sample in which represent all over population. Taking sample done use calculation with formula slovin, who after done calculation with the formula that has been applied, obtained results end of 75.90 which then rounded up by researchers to 80. With Thus, the number the sample to be applied to research This is 80 students. There are three the method used in collecting data, namely, methods survey questionnaire as method collecting primary data ; method observation used For search for supporting data and; methods documentation used in data testing and Interpretation. Instrument applied research​ is questionnaire with use scale *Likert* 1-5. Standard scale *Likert,* according to Sugiyono, selected For analyze response questionnaire that includes attitudes, opinions and perceptions Respondent to a events. There are five options in questionnaire: strongly agree, agree, neutral, no agree, and strongly disagree agree. To test instrument suitability is tested for validity, criteria validity can determined with inspect the calculated r value in the validity test, where mark the must exceeds (R Table value) for considered valid. After That reliability testing is carried out, it can We know if mark *Cronbach alpha* is more big from 0.6 then it is said reliable. In testing hypothesis, simple linear regression used as calculation how much big influence variable X against Y variable. Calculation and data management using SPSS 25 application.

1. **RESULT AND DISCUSSION (Calibri, 12 Bold)**

**RESULT (Calibri, 12 Bold)**

**Approach *Technological Pedagogical Content Knowledge* (TPACK)**

Calculation analysis descriptive show that TPACK approach accepted with both by students. The following table showing​ levels at each existing indicators​ in variable TPACK approach in table 1 below:

**Table 1. Percentage Results Questionnaire TPACK Approach**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No. | Indicator | Measurement Scale | | | | |
| **Strongly agree** | **Agree** | **Neutral** | **Don't agree** | Absolutely not agree |
| 1 | Knowledge Technological | 32% | 53% | 15% | 0% | 0% |
| 2 | Knowledge Pedagogy | 24% | 51% | 24% | 0% | 0% |
| 3 | Knowledge Content | 31% | 52% | 17% | 1% | 0% |
| 4 | Knowledge Technological Pedagogical | 23% | 52% | 25% | 0% | 0% |
| 5 | Knowledge Technology Content | 40% | 47% | 13% | 0% | 0% |
| 6 | Knowledge Pedagogy Content | 31% | 43% | 25% | 0% | 0% |
| 7 | Knowledge Technology Pedagogy Content | 25% | 46% | 28% | 1% | 0% |
| **Average** | | **29%** | **49%** | **21%** | **0%** | 0% |

Influence TPACK approach to performance student to obtain the highest average score in the “agree” category with mark level of 49% and the lowest average score in the category “no agree” and “strongly disagree” agree” with level 0%. This result show that TPACK approach at SMA Negeri 1 Ponorogo walk with Good.

**Performance Study**

Performance Study obtained student from business and work hardness in learning. However, there are two factors that influence performance Study that is from internal and external factors factor external. These factors Can in the form of from aspect health, emotional, motivation, environment class and so on. Following Exposure calculation from questionnaire variable performance students who can seen in table 2.

**Questionnaire Results Performance Student**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| No. | Indicator | Measurement Scale | | | | |
| **Strongly agree** | **Agree** | **Neutral** | **Don't agree** | Absolutely not agree |
| 1 | Physical Health | 32% | 44% | 19% | 4% | 1% |
| 2 | Intelligence | 27% | 47% | 23% | 2% | 1% |
| 3 | Bakat Siswa | 22% | 49% | 27% | 1% | 1% |
| 4 | Minat | 19% | 44% | 35% | 1% | 0% |
| 5 | Kreativitas | 18% | 39% | 41% | 1% | 1% |
| 6 | Motivasi | 17% | 50% | 33% | 0% | 0% |
| 7 | Condition Stable psychoemotional​ | 15% | 48% | 37% | 0% | 0% |
| 8 | Environment physique school | 20% | 48% | 30% | 1% | 0% |
| **Average** | | **21%** | **46%** | **30%** | **1%** | 1% |

The table above show acquisition presentation answer from respondents. The highest average on the option agree with 46%, and the lowest on the option No agree and strongly disagree agree with each percentage is 1%. Percentage the show that tested indicators​ relevant and appropriate with conditions in the field.​

**Simple Linear Regression Equation Results**

Regression analysis simple intended and used For test influence One variable to variable bound. Conditions can simple linear regression test was conducted is the validity and reliability of the data, then the data presented must be normal and linear. Requirements the must fulfilled When will simple linear regression test was conducted.

**Table 3. Simple Linear Regression Results**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ANOVA a | | | | | | | |
| Model | | Sum of *Squares* | df | Mean *Square* | | F | Sig. |
| 1 | Regression | 5724,545 | 1 | 5724,545 | | 165,387 | ,000 b |
| Residual | 2665,202 | 77 | 34,613 | |  |  |
| Total | 8389,747 | 78 |  | |  |  |
| a. Dependent Variable: Achievement student | | | | |
| b. Predictors: (Constant), TPACK Approach | | | | |

Table 3 above explain, the output obtained can explained that F count value = 165.387 with level significance of 0.000 < 0.05. Then the regression model can used For predict variable participation, or in other words there is influence variable X against variable Y.

**Coefficient Results Determination**

Strength linear and directional relationships variable free (X) and variable bound (Y) is indicated by the coefficient correlation (R), while coefficient determination (R2) shows strength of the model in show variation variable X. Small R2 value show that variable X explains variation variable Y is limited. The coefficient correlation (R) positive of 0.826 is shown by the results testing, which shows that variable (X) gives almost all required information​ For predict variable Y, with close value​ one. This shows that There is connection one way between variable TPACK(X) approach and achievement Study students (Y). Therefore that, implementation TPACK(X) approach will followed by an increase performance students (Y) who are more big. However, with mark coefficient determination (R2) 0.682, meaning that TPACK(X) approach influences variable coefficient determination (R2) of 68.2% and the factor addition by 31.8%. Factors the including role head school, motivation student For learning, internal and external factors, leadership head school, supervision, and evaluation learning. The results of the R and R2 tests can seen in Table 4. Below table analysis coefficient determination:

**Coefficient Results Determination**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model Summary | | | | |
| Model | R | R *Square* | Adjusted R *Square* | Std. Error of the Estimate |
| 1 | ,826 a | ,682 | ,678 | 5,883 |

TPACK method as variable free influence performance Study student as variable bound, as shown in Figure 1. The TPACK(X) approach has level influence by 68.2% in achievement Study student during the learning process, so can concluded that implementation TPACK approach is factor main influencing factors improvement performance Study students. Correlation value both of them is 0.826, and every increase One score on variable X is able increase variable Y. With Thus, the implementation TPACK approach can give influence level success implementation TPACK approach in learning comparable with level success student in study in class.

R2 = 0, 682

R = 0, 826

Pendekatan TPACK

Prestasi belajar

siswa

Figure 1. Relationship between variables

**DISCUSSION**

After he did study as well as data analysis on research conducted at SMA N 1 Ponorogo with hypothesis beginning existence influence TPACK approach to performance student so researcher get findings that will be discussed in discussion following.

1. TPACK Approach

The TPACK approach is an attempt to integrate learning and technology. Research conducted by Jilah Safitri from Esa Unggul University, West Jakarta, stated that the teaching and learning process that applies the TPACK approach is able to improve students' understanding. Students are proven to be enthusiastic when teaching applies this approach. Students also show increased activity and form student attitudes and behavior when learning takes place. (Safitri & Rizky, 2021) .

The results of this study are that students are able to improve the quality of learning through the teaching and learning process using the TPACK approach. According to the presentation of the data results that have been obtained, the level or percentage of students who are satisfied and feel helped by the implementation of the TPACK approach shows a significant value. So it can be concluded that the TPACK approach helps students to deepen and feel comfortable in learning Islamic Religious Education subjects in particular.

1. Performance Student

There are some factor affecting​ performance students, among others, are internal factors. Internal factors include related matters​ with good health physique both mental and emotional students, motivation and so on. In addition That there are also those that come from from factor external, thing This usually like condition environment class, facilities infrastructure, environment social good at school and also in scope family. That is capable become inhibitor in the learning process and efforts improvement performance student.

Research conducted at SMA N 1 Ponorogo produce findings that in data mining with use questionnaire found answer students who stated agree with the average percentage is 46% and strongly agree with an average percentage of 21% above a number of factors that influence performance learning. This is show Lots factors that influence achievement performance desired students.​

1. Islamic Religious Education Learning

Islamic religious education is a learning process that focuses on channeling knowledge and values of the Islamic religion to individual or through institution education. This process aiming For deepen understanding to aspect academic and practical everyday Islamic religion, so can applied with relevant in life participant Educate (Wahidin et al., 2022) . Islamic Religious Education Learning at SMA N 1 Ponorogo aiming For to plant Islamic religious values and norms in students. PAI learning is carried out use approaches that are m= relevant with daily life student as well as fun. Use technology in learning proven effective For increase performance student.

1. Influence TPACK approach to Islamic Religious Education learning performance student

Researcher study show existence influence between TPACK approach to performance student class 11 of Ponorogo 1 State High School. This is based on the hypothesis test (t-test) which shows that mark the significance of the t-test is 0.000<0.05, which concludes that H 0 rejected and H 1 accepted, which means existence influence variable X (TPACK approach) to variable Y (achievement) student).

Based on table Coefficient Determination (R *Square)* of variable X (TPACK approach) has an influence by 68% against variable Y (achievement) students) and 32% others influenced for reasons other reasons.​​ Can originate from management strategy head school in increase achievement, then condition participant educate, means infrastructure and so on. Efforts made is with increase involvement and care inhabitant schools and organizations through communication effective, motivating work and improvement discipline educator For maximize the learning process.

1. **CONCLUSION (Calibri, 12 Bold)**

The T test results were obtained mark from Variable X (TPACK approach) with mark significance 0.000 more small from 0.05. So that can concluded that variable X has an effect to Variable Y. Then H 0 rejected and H 1 accepted. It means there is influence variable free to variable tied.. So that can known that There is influence between variable X (TPACK approach) towards variable Y (Achievement) students). The results of the coefficient test determination (R *Square)* shows mark of 0.682 of results calculation. So it can concluded influence from existence TPACK approach to performance student class 11 of Ponorogo 1 State High School get mark levels influence by 68%. Then it can explained that existence TPACK approach is influential as much as 68%, and the rest due to a number of other factors.

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