

## The Influence Of Technology Readiness, Professional Development And Teaching Autonomy On Pedagogical Innovation Of Teaching Staffs In Higher Education

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### ABSTRACT

Penelitian ini bertujuan untuk menguji dampak gabungan Kesiapan Teknologi dan Pengembangan Profesional bersama dengan Otonomi Pengajaran terhadap Inovasi Pedagogis yang diterapkan oleh para pengajar di universitas. Para peneliti menggunakan desain penelitian kuantitatif untuk melakukan studi mereka yang melibatkan survei terhadap 170 anggota fakultas universitas yang telah dipilih melalui pengambilan sampel bertujuan. Studi ini mensyaratkan responden untuk memenuhi tiga kondisi, yaitu menjadi dosen aktif yang telah bekerja minimal dua tahun sambil menggunakan teknologi pembelajaran dan menyelesaikan pelatihan pengembangan profesional. Tim peneliti menggunakan analisis regresi linier berganda untuk mengevaluasi data mereka. Para peneliti melakukan uji validitas dan reliabilitas bersama dengan penilaian normalitas dan pengujian heteroskedastisitas serta evaluasi multikolinearitas sebelum memulai prosedur analisis data mereka. Tiga variabel Kesiapan Teknologi dan Pengembangan Profesional serta Otonomi Pengajaran bersama dengan komponen individunya yang mencakup Inovasi Pedagogis menunjukkan hubungan positif yang mencapai signifikansi statistik. Penelitian ini menunjukkan bahwa universitas dapat mencapai lebih banyak inovasi pedagogis melalui dua tindakan, yaitu mengembangkan kesiapan teknologi melalui pengembangan profesional berkelanjutan dan memberikan kemandirian akademik kepada para profesor selama proses pengajaran mereka. Penelitian ini bertujuan untuk mengembangkan standar pendidikan tinggi yang akan bermanfaat bagi lembaga pendidikan tinggi Indonesia.

The research investigation wants to examine the combined impact of Technology Readiness and Professional Development together with Teaching Autonomy on Pedagogical Innovation which instructors implement at universities. The researchers used a quantitative research design to conduct their study which involved surveying 170 university faculty members who had been selected through purposive sampling. The study required respondents to meet three conditions which included being an active lecturer who had worked at least two years while using learning technology and completing professional development training. The research team used multiple linear regression analysis to evaluate their data. The researchers conducted validity and reliability tests together with normality assessment and heteroscedasticity testing and multicollinearity evaluation before they initiated their data analysis procedures. The three variables of Technology Readiness and Professional Development and Teaching Autonomy together with their individual components which cover Pedagogical Innovation showed a positive relationship that reached statistical

significance. The research shows that universities can achieve more pedagogical innovation by two actions which develop technological readiness through continuous professional development and provide professors with academic independence during their teaching process. The research aims to develop higher education standards which will benefit Indonesian higher education institutions.



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## INTRODUCTION

The current educational system requires universities to develop new teaching methods because technological progressions in digital education and international educational system growth and changes in student learning behaviors require new teaching approaches (Aswadi & Lismayanti, 2019). Pedagogical innovation functions as the essential element for educational transformation in higher education because it enables educators to create effective learning solutions that meet contemporary student requirements. The educational system requires pedagogical innovation because classical educational methods which depend on one-way instruction fail to engage students while hindering their capacity for creative and critical thinking (Lahiya et al., 2025). The world needs universities to produce graduates who demonstrate academic excellence together with essential skills for adaptation and teamwork and digital competency. The development of new teaching methods will enable educators to accomplish their objectives which they will use to enhance their classroom teaching. Educational institutions can implement pedagogical innovation through various digital learning technologies and project-based learning and flipped classroom and blended learning and student-centered teaching approaches (Winda et al., 2024).

Teachers in higher education need to master advanced technology tools before they can successfully implement new teaching methods. Technology readiness indicates how well a person can handle technological systems which help with their job duties and learning activities (Yani et al., 2025). Teachers at present educational institutions need to utilize all available technology tools for supporting student learning during this time of educational digital transformation. Teachers who possess advanced technological skills can implement new digital learning approaches with greater efficiency. The educators show greater willingness to adopt new solutions because their confidence in using cutting-edge technologies has improved their capacity to develop educational materials which students can actively learn from (Aziz, 2016). The ability of teachers to develop new teaching methods in higher education depends mainly on their professional development activities. Professional development training consists of multiple activities that teachers conduct to improve their teaching abilities and professional skills and academic knowledge. Professional development activities include training sessions and workshops and seminars and certification programs and academic conferences and other programs which help participants develop new competencies (Sadikin et al., 2023). The professional development activities that teachers participate in at higher education institutions make it possible for them to study contemporary educational methods. The teaching methods and learning materials and assessment techniques and instructional strategies that educators select to use in their work with students determine how educational institutions adopt new teaching methods (Nuraeni & Riyanti, 2017). Educational institutions will see the development of new teaching methods when educators receive greater autonomy to create their own educational methods (Nuraeni et al., 2020). Educators create their instructional methods because they need to meet their students' requirements and handle changes in their teaching environments. Excessive bureaucratic and regulatory procedures make the academic system more restrictive which directly impacts the creative ability of teachers to develop innovative solutions. The absence of teaching material development freedom for teachers results in decreased educational innovation (Senoaji et al., 2024; Hakim et al., 2025).

The research investigates how Technology Readiness Professional Development and Teaching Autonomy impact university lecturers' ability to execute Pedagogical Innovation. The researchers study

learning innovation together with teacher competency development to create theoretical knowledge which will enhance higher education management understanding. The research investigates the elements which determine how educational institutions develop new teaching methods. The results are expected to serve as a reference for further research addressing similar topics. The study provides practical benefits because it helps university leaders create better programs for lecturer professional development. The results can be used to establish improvements in teacher technology readiness and to extend professional development programs and to develop academic policies which encourage teaching innovation.

## **METHOD**

The researchers conducted a quantitative research study to examine how Technology Readiness Professional Development and Teaching Autonomy affect Pedagogical Innovation among university lecturers. The research team conducted surveys using a structured questionnaire which they developed to measure all variables according to their specific indicators and used a Likert scale that ranged from 1 to 5 for measurement. The study population included all permanent faculty members who worked at both public and private universities. The research team selected university lecturers as study participants because they met the criteria of having worked at least two years while using learning technologies and attending professional development training and certification events during the last two years. The research study needed 170 respondents because that number provided enough data for multiple linear regression analysis. The researchers collected data by distributing questionnaires through both direct contact and online digital platform distribution. The instrument validity test used a t-test method to verify item validity through t-test results which needed to exceed a t-table value at 5% significance level. The researchers conducted a test for instrument reliability through Cronbach Alpha which required a minimum reliability score of 0.70. The researchers conducted classical assumption tests before main analysis to test data through normality and heteroscedasticity and multicollinearity tests which confirmed that the regression model met requirements for analysis. The research used multiple linear regression as the primary analysis method to evaluate how independent variables affected the dependent variable.

## **RESULT AND DISCUSSION**

The assessment used data from 170 university lecturers who worked in both state and private educational institutions to establish the validation and reliability of research instruments. The validity test results determined all statement items in Technology Readiness, Professional Development, Teaching Autonomy, and Pedagogical Innovation variables met validity requirements because their t values exceeded the t table threshold at 5% significance. The reliability test results showed that all variables achieved Cronbach Alpha values above 0.70 which proved that the research instrument maintained consistency while it met operational standards. The normality test results showed that the residual data distribution pattern followed a normal distribution. The heteroscedasticity test identified no heteroscedasticity patterns in the data while the multicollinearity test results showed that all independent variables had VIF values below 10 and tolerance values above 0.10 which proved that the regression model had no multicollinearity problems. The F test results showed that Technology Readiness Professional Development and Teaching Autonomy produced a statistically significant effect on Pedagogical Innovation through multiple linear regression analysis which demonstrated the relationship between these three variables. The t-test results proved that the three independent variables produced a significant positive impact on Pedagogical Innovation. The coefficient of determination ( $R^2$ ) value shows that three independent variables explain most of the variation in Pedagogical Innovation while other factors outside the research model account for the remaining variation.

The research establishes that Technology Readiness establishes a strong positive connection to the Pedagogical Innovation work which university lecturers conduct. The results demonstrate that lecturers who improve their technology acceptance abilities will gain more power to develop educational innovations. Lecturers with high advanced technological readiness skills are able to utilize digital learning platforms that include Google Classroom Moodle Zoom and Microsoft Teams. They demonstrate higher preparation levels for implementing teaching techniques that use blended learning methods along with flipped classroom approaches and digital collaboration tools. Lecturers who do not

possess technological readiness abilities maintain their usage of traditional teaching methods which lack any innovative elements. Higher education institutions consider technological readiness to be the fundamental element which supports their educational transformation during the digitalization process. The study results support technology acceptance theory which holds that technological readiness leads to workplace innovation. Previous research also demonstrates that technology adoption improves teaching effectiveness. The universities need to provide continuous technology training for lecturers to enhance their digital literacy skills which will lead to better pedagogical innovation development.

The study results show that professional development programs create positive results which result in improved teaching practices. The research demonstrates that increased lecturer participation in professional development programs enhances their ability to create educational innovations. The combination of seminars workshops academic conferences and pedagogical training and professional certification programs enables lecturers to acquire knowledge about modern educational methods. The process enables them to create educational methods which meet the specific needs of their students. Through professional development lecturers achieve ongoing academic and teaching knowledge advancement. The teaching abilities of lecturers will decrease when they choose not to participate in professional development activities. The study results support human capital theory which asserts that investing in competency development leads to increased innovation capacity. Previous studies demonstrated that professional training influences both work creativity and teaching effectiveness. The universities should create ongoing development programs which will provide their lecturers with training that will enhance their teaching methods. The institutional support process requires both financial resources and opportunities for academic development to create effective backing for this initiative.

The research demonstrates that Teaching Autonomy enables higher education institutions to achieve Pedagogical Innovation through its positive effects on their teaching staff. The research shows that increased teaching strategy independence for lecturers leads to greater development of innovative teaching methods. The ability of lecturers to select their learning methods and teaching materials and assessment techniques and classroom practices will result in student learning activities that demonstrate new educational advancements. The academic system which operates through excessive administrative control and strict rules will restrict lecturers from developing their innovative ideas. The development of teaching autonomy allowed lecturers to create their professional responsibilities which required them to sustain educational excellence through their teaching methods. The study results support self-determination theory which asserts that autonomy leads to increased internal motivation and creative abilities. Previous research demonstrated that academic freedom positively influences teaching innovation. Universities should establish academic regulations that allow flexibility while creating an environment that enables their faculty members to develop innovative teaching methods. Educational institutions use teaching autonomy as their essential component to create innovative teaching methods.

## **CONCLUSION**

The research study demonstrated that Technological Readiness and Professional Development together with Teaching Autonomy and their individual components delivered beneficial outcomes for university lecturers who wished to apply Pedagogical Innovation. The study found that technology readiness serves as a vital element which drives lecturers to adopt contemporary educational technologies and develop more progressive teaching approaches. The professional development program provides professional development access which enables lecturers to acquire new skills through training activities and seminar sessions and workshop programs and other educational events which provide them pedagogical knowledge. The research shows that teaching autonomy allows lecturers to develop their own teaching methods which meet the needs of their students. The three variables function as essential strategic elements which enable universities to enhance their learning innovation performance standards. Higher education institutions need to improve their educational technology infrastructure while they expand their professional development programs for lecturers and create more flexible academic policies which support teacher development of creative abilities. The research model requires additional variables to be included which will complete the research framework through organizational culture and leadership support and digital literacy and student engagement measurement.

The research provides both theoretical and practical results which support higher education institutions to advance their innovation development during the digital transformation era.

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