Applied & Educational Psychology (2023)
Clausius Scientific Press, Canada

DOI: 10.23977/appep.2023.040913
ISSN 2523-5842 Vol. 4 Num. 9

Teachers' Technological Skills in Influencing Students' Learning Motivation

Shuwei Sun*

Graduate School, Adamson University, Manila, 1000, Philippine
**Corresponding author*

Keywords: Technological skills, learning motivation, teaching skills

Abstract: Teachers' familiarity with modern technology is increasingly important for both teaching effectively and inspiring today's pupils. To better understand how instructors' familiarity with technology influences their pupils' desire to learn, a research was undertaken. Three hundred and forty-seven students between the ages of 18 and 23 were polled to learn more about their perspectives on using technology in the classroom. Researchers found that classroom instruction has improved as a result of teachers' use of digital tools. Gender differences and other factors highlight the need for a more individualized and adaptable educational system to meet the demands of students of different backgrounds and perspectives. To make progress, schools should conduct periodic curriculum reviews with tech experts, implement robust professional development programs focused on technological upskilling, encourage peer feedback and open dialogues, and create platforms for these activities.

1. Introduction

Target tracking technology has an important application value in both military and civil fields [1]. In 1937, the first tracking radar station (SCR-28) appeared in the world [2]. Since then, with the continuous development and progress of sensor technology, target tracking systems based on radar, laser, infrared and satellite appear more and more in various fields. Technology leadership is a novel idea in school leadership that entails school leaders, teachers, and administrators developing and maintaining support for the efficient use of information and communication technology (ICT) in teaching and learning. Working with teachers and assisting them to improve educational processes is an essential notion in educational management. It also entails harnessing teachers' abilities and potentials and adapting them to achieve educational goals, resulting in enhanced teaching and learning. Leadership is thus of major significance to learning and, as such, is required for better levels of school accomplishment.

In the digital age, rapid advancement in technology influence education inherently. This study explored the technology leadership of teachers and school administrators, and the learning motivation of students from Henan University of Chinese Medicine. To achieve this, the research will use quantitative research technique by adopting the descriptive-correlational method to describe the variables of the status of technological leadership in the institution and the learning motivation of the students when taught and managed using this form of leadership. Meanwhile, the

correlation part will be employed by determining the relationship between technological leadership and learning motivation. Moving target tracking is a hot topic in many scientific research institutes at home and abroad, which involves advanced technologies such as control, signal processing and communication. Among them, this technology is also widely used in the intelligent workshop product tracking system[3].

This study will determine the status of using technology as a tool for teachers' leadership towards improvement of the students' learning motivation. The output of this will then be a proposal on how enhance the technological leadership practices of the teachers towards improving the learning motivation of the students in the institution. This study will be conducted in 2023-2024 academic year.

2. Methodology

2.1 Research Design

The study utilized a descriptive- comparative- correlational approach as its research design. The descriptive-correlational design is a form of quantitative kind of research. Closed-ended questions are commonly used in quantitative research design. Respondents was not be able to make lengthy open-ended responses if they are given a predefined selection of answers. This approach assures that the quantitative research procedure is significantly more efficient than if qualitative-style open-ended questions were used. In this study, a quantitative approach was done when collecting, analyzing, and interpreting data from the students. This included their demographic profile, assessment of the status of technological leadership, and the level of learning motivation. Data were collected through a questionnaire which will be using the 4-point Likert Scale. The variables was subsequently subjected to statistical analyses to determine the significant relationships, differences, and patterns.

2.2 Sampling Method

Random sampling was used in the study, the selected student-respondents from the College of Medicine at the Henan University of Chinese Medicine was assessed on their perceptions of technological leadership of the teachers in the institution and learning motivation for student-respondents. This college has a total population of 3,535 students in the College of Medicine, and using the Raosoft calculator with a 50% response distribution, 95% confidence level, and 5% margin of error, the recommended sample size for the students is 347 student-respondents. Hence, 347 students were involved in the sample of the study. For the criteria of the students, they must be currently enrolled at Henan University of Chinese Medicine during the second semester school year and mid-year term of school year 2023 – 2024; and the student respondents must belong to the College of Medicine in the same institution.

2.3 Data Gathering Procedure

Before beginning the data collection method, the researcher requested consent from the administrative office of Henan University of Chinese Medicine in Henan Province. To do so, the researcher sent a letter of request and once approval is given, the mentioned research instruments were distributed to the students in the College of Medicine. Following the data collection procedure, the material were organized and analyzed and evaluated for noteworthy discoveries. The researcher made relevant inferences from the data. It is also important to note that the data collection procedure begun in July 2023, with the final results of the research being given at the conclusion of

the semester.

2.4 Statistical Treatment of the Data

The study employed statistical and descriptive analysis. Data were analyzed statistically using treatments with a 0.05 level of significance and with the use of the software Statistical Package for Social Sciences (SPSS). After which, the data were described, discussed, and analyzed in the subsequent sections of the study.

2.4.1 Frequency Count and Percentage

These was carried out utilizing information gathered from the demographic profile of the student-respondents/ The information on the students' age, sex, and year level; and were treated to these statistical approaches so that the researcher may have a better understanding of the characteristics of the population questioned. This was also assist the researcher in locating important observations that are connected or correlated with age, sex, or year level.

2.4.2 Weighted Mean

The researcher computed the weighted mean or average of the findings from the Likert Scale used for each of the indications in the questionnaire. By doing so, general information technology leadership of the school and its relationship with the student's learning motivation was derived.

In addition to this, the researcher used a Likert Scale that consisted of four (4) points. This ranged from Strongly Disagree (SD = 1); Disagree (D = 2); Agree (A=3); to Strongly Agree (SA = 4). The interpretation and further details of each point can also be seen below.

2.4.3 T-test / ANOVA

The researcher utilized a t-test along with the weighted means obtained to detect any existing discrepancies between the variables employed in the study's research questions in terms of the profile variables. Specifically, this was used to find differences between the profile of the student-respondents and their level of learning motivation; Meanwhile, ANOVA or Analysis of Variance was used to find if there are existing differences between the age and year level of respondents in the variables assessed by the students.

2.4.4 Pearson's (r) Correlation Analysis

To accomplish the research objectives, the researcher tested the relationship between the students' learning motivation as assessed by the students themselves and the technological leadership of the teachers. The researcher analyzed the link between these two variables utilizing Pearson's (r) correlation analysis and the indicators from the questionnaire.

3. Analysis and Interpretation of Date

3.1 Sampling Method

A survey of 347 students looked at how they felt their teachers' technology knowledge and teaching enthusiasm. The average age was 22, with a sizable minority in the 18-20 range. Teachers were judged to be "Excellent" in integrating technology into their lessons, but only "Good" at assessing students' progress and managing classrooms. The students' enthusiasm for studying was high, and they demonstrated "Very Good" levels of technical interest in their studies. In order to

develop a holistic and digitally integrated learning environment, the research emphasizes the need of adapting pedagogical practices to meet the needs of a wide range of student populations. The largest percentage of participants in this research are between the ages of 21 and 23. Students between the ages of 18 and 23 make up 68.3 percent of the sample, demonstrating the importance of undergraduates in both the beginning and end of the learning process. Doctoral candidates, post-graduates, and non-traditional students may make up the 27-and-up age bracket.

The gender of the students' respondents is almost even. Female perspectives are somewhat better represented in the statistics according to the slightly larger proportion of female respondents. The inclusion of students from every year of college shows that the results are representative of students' perspectives and experiences throughout their time in the baccalaureate program.

3.2 The assessment of student respondents on the Technological Skills of the Teachers

The assessment of the students on the technological skills of the teachers got the highest marks for technical competence in terms of research and communication and educational management. The willingness to learn" was deemed the most important quality, with an excellent rating while technological engagement got a very good assessment. The findings demonstrate students' want to learn and their openness to using technology in the classroom. While doing so, they are able to assess their own performance and identify places where they may improve.

3.3 Respondents Assessment on Technological Skills

Table1 labelled "Students' Assessment of Teachers' Technological Skills in Various Domains" provides insightful information about how students rate their teachers' technology proficiency in a variety of educational areas.

Table 1: Students' Assessment of Teachers' Technological Skills in Various Domains

Domains	Mean	SD	Adjectival Description	Interpretation	Rank
Teaching and Learning	4.0	0.2	Strongly Agree	Highly Manifested	1.5
Assessment and Evaluation	3.8	0.3	Agree	Manifested	3
Research and Communication	4.0	0.2	Strongly Agree	Highly Manifested	1.5
Educational Management	3.7	0.4	Agree	Manifested	4
Composite Mean	3.7	0.3	Agree	Manifested	

The overall mean score of 3.7 (which is part of the "Agree/Manifested" adjective description) suggests that students are generally optimistic. Overall, educators are doing a good job of incorporating technological tools into their lessons. However, a closer look shows differing degrees of competency and room for progress in various categories.The "Teaching and Learning" category receives the highest ranking of 1.5, falling under the "Strongly Agree/Highly Manifested" category with a mean score of 4.0 and a standard deviation (SD) of 0.2. This demonstrates that educators have effectively incorporated technology into their principal responsibility—educating students. A small standard deviation indicates that most students fell into the same general category in their replies. The "Research and Communication" domain's mean score is 4.0 with an SD of 0.2, matching it at position 1.5 with the "Teaching and Learning" domain. Teachers are using technology to do research and maintain open lines of communication with their pupils, as seen by this result. This knowledge is crucial in the modern technological environment. The teachers' ability to effectively use online resources and keep lines of communication open speaks volumes about their flexibility and dedication to student involvement, particularly in a possible mixed or distant learning setting.

3.4 Differences in the Assessment of Respondents When Their Profile is Taken as Test Factor

The impact of student profile characteristics on teachers' perceived technical leadership is explored using T-tests and ANOVA (Analysis of Variance) findings, which are shown in Table 2. Age, sex, and education level are the three profile factors that are taken into account in this table. The outcomes are broken down into the T- or F-value that was determined, the corresponding P-value, and the ultimate interpretation depending on the significance of the P-value.

Table 2: Difference in the Assessment of Technological Leadership When Profile Variables were taken as Test Factor

Profile Variable	T/ F-value	P-value	Interpretation
Age	1.58	0.19	Not Significant
Sex	2.43	0.03	Significant
Year Level	0.87	0.46	Not Significant

For the independent variable "Age," the F-value is 1.58 and the corresponding P-value is 0.19. A P-value of less than 0.05 is generally regarded to be statistically significant in scientific investigations. Given that the Age factor's p-value is larger than 0.05, the Age factor's effect on opinions of technical leadership is "Not Significant." This suggests that there is no variation in students' evaluations of their instructors' technical leadership based on the age of the students who responded to the survey. Sex has a 2.43 T-value and a 0.03 P-value. Due to the fact that the P-value is smaller than 0.05, we classify the effect of sex on opinions of technical leadership as "Significant." This implies that there is a statistical difference in how male and female students see instructors' technical leadership.

The students' self-evaluations of their learning motivation across these three dimensions are shown in Table 3. The motivational levels are rated based on the average scores for each element and the following explanations given.

Table 3: Students' Assessment on Learning Motivation

Domains	Mean	SD	Adjectival Description	Interpretation	Rank
Willingness to Learn	4.0	0.2	Strongly Agree	Highly Manifested	1
Technological Advancement	3.7	0.3	Strongly Agree	Manifested	2
Overall Performance	3.6	0.5	Strongly Agree	Manifested	3
Composite Mean	3.3	0.2	Agree	Manifested	

Legend: 3.51-4.0 Strongly Agree/Highly Manifested, 2.51-3.50 Agree/Manifested, 1.51-2.50 Strongly Disagree/Slightly Manifested 1.00-1.50 Disagree/ Not Manifested

The pupils' "Willingness to Learn" was rated as strongly agree with a score of 40. Students that responded to the survey clearly have a lot of interest in learning for its own sake. Students that get an excellent grade demonstrate a high degree of attention and enthusiasm towards their studies by demonstrating that they are interested in both grasping the material offered and actively pursuing information[4].The average score for the category "Technological Engagement" was a 3.7, making it agreeable to the respondents. Students' favorable attitudes on using technology to enhance their education are borne up by these findings. They probably make good use of online tools, platforms, and resources to supplement their education. The "very grade implies a high degree of comfort and efficiency with technology in their academic path, but it also shows that there may be some small areas or obstacles that might be solved for an optimum experience. With a composite mean of 3.3 and a "Very Good" verbal interpretation, "Overall Performance" provides insight into students' perceptions of their own performance in school. The students are satisfied with their efforts overall, but don't think they've performed at a really elite level.

3.5 Difference on Students Learning Motivation of the Respondents when their Profile is taken as Test Factors.

3.5.1 Differences when grouped by sex

Table 4: Difference in the Assessment of Learning Motivation When grouped by Sex

Variable	Sex		t-value	Sig. value	Decision on Ho	Interpret
	Male	Female				
Willingness to Learn	2.49	2.42	9.96	.09	Accept	Not significant
Technological Advancement	2.46	2.55	8.33	.14	Accept	Not significant
Overall Performance	2.50	2.48	7.45	.00	Reject	Significant
Overall Mean	2.48	2.52	8.32	.061	Accept	Not significant

Table 4 using t-test of independent Samples, the overall mean difference in the assessment of the respondent students on learning motivation by sex yield not significance. The null hypothesis was accepted at 5% level of significance. This further implied that male and female respondents do not differ in their assessment. . Perhaps motivation to learn do not differ regardless of sex. However it should be noted that Variable on Overall performance obtain a t-value of 7.45 with a computed sig value of .00, interpreted to mean Significant. This shows that male and female respondents have differing learning motivation when it comes to performance.

3.5.2 Difference when grouped by Age

Table 5: Difference in the Assessment of Learning Motivation when grouped by Age

Variable			t-value	Sig. value	Decision on Ho	Interpret
	Group	Mean				
Willingness to Learn	18 yrs	3.59	9.96	.094	Accept	Not significant
	19 yrs	2.45				
	20 yrs	3.00				
	21 yrs	2.45				
Technological Advancement	18yrs	3.67	8.33	.141	Accept	Not Significant
	19 yrs	2.55				
	20 yrs	2.57				
	21yrs	3.53				
Overall Performance	18yrs	3.56	14.72	.611	Accept	Not Significant
	19yrs	3.42				
	20yrs	3.09				
	21yrs	3.41				
Overall Mean	18 yrs	3.51	123.45	.126	Accept	Not Significant
	19 yrs	3.00				
	20 yrs	3.06				
	21 yrs	2.48				

Table 5 using ANOVA, the overall mean difference in the assessment of the respondent students on learning motivation yield F-value of 123.45 and a computed significance value at .126, which accepts the null hypothesis. This means that no significant difference can be found among students of various age groups. Noteworthy are the mean values among “18 years olds” where learning

motivation are greater with Technology Advancement. As motivation plays a crucial role in the learning process, it is necessary for students to exert effort toward learning and improve their academic performance. Motivation is essential for fostering and maintaining self-regulated learning, which frequently leads to enhanced academic performance. Compared to unmotivated students, academically motivated students are more likely to engage, persist, and exert effort to complete tasks [5].

3.5.3 Differences when grouped by grade level

Table 6: Difference in the Assessment of Learning Motivation when grouped by Grade Level

Variable	Group	Mean	t-value	Sig. value	Decision on Ho	Interpret
Willingness to Learn	Freshmen	3.49	.879	.452	Accept	Not significant
	Sophomore	3.42				
	Junior	3.93				
	Senior	3.78				
Technological Advancement	Freshmen	3.48	.165*	.005	Reject	Significant
	Sophomore	3.50				
	Junior	3.83				
	Senior	3.76				
Overall Performance	Freshmen	3.56	5.03	.082	Accept	Not Significant
	Sophomore	3.54				
	Junior	3.68				
	Senior	3.07				
Overall Mean	Freshmen	3.66	4.96	.154	Accept	Not Significant
	Sophomore	3.52				
	Junior	3.72				
	Senior	3.61				

*Pair with significant difference at .05

Table 6 using ANOVA or F-test , the overall difference in the assessment of the learning motivation among the students yield a F-value of 4.96 with a calculated sig value at .154 , which is not significant. Since the, the computed significance value is greater than .05, The null hypothesis is then accepted. Generally, it resulted that regardless of grade level there was no variation in the assessment of learning motivation. Perhaps, students are bound by the idea that learning are expected. Likewise on the variable Technological Advancement, the assessment with respondents with respect to grade level, yield F- value of .165 with a computed sig value of .005 rending the assessment “Significant”.

3.6 Relationship between the assessed technological skill and the learning motivation

Using a Pearson Product Moment of Correlation, the relationship between the assessed indicators of technological skills of the teachers and the learning motivation is herein indicated. Generally, the overall correlation ranged from R-value of 262 to .876. Indication moderate to strong and positive correlation.

Table 7 using Pearson r, the association between technological skills and willingness to learn yield a R-value of .876 and a computed value.000, indicate a strong and positive correlation. It may seem to indicate that the more teachers’ manifest competencies in technological skill, the more students are encourage to do better. In terms of technological engagement, the r value of .723 suggest a direct and positive relationship. Regarding overall performance, 0.625 suggests a more admirable correlation, where technical skills can encourage more students to perform better in the classroom.Therefore, technological leadership is a leadership strategy launched on the ease of

utilizing technology by school employees, alongside the option of collaborating with technology providers from within or outside the institution to ensure the success of its work[6]. Technological leadership emerged as a new approach for schools to adopt in order to reflect the realities of the constant transformation and progress seen across all of our communities.

Table 7: Relationship between the assessed Technological Skills and Learning Motivation

Technological Skills	Statistical treatment	Learning Motivation		
		Willingness to Learn	Technological Advancement	Overall Performance
Teaching and Learning	Pearson r	.876	.723	.625
	Sig Value	.000	.000	.003
	Decision on Ho	Reject	Reject	Reject
	Interpretation	Significant	Significant	Significant
Assessment and Evaluation	Pearson r	.536	.645	.537
	Sig Value	.000	.001	.002
	Decision on Ho	Reject	Reject	Reject
	Interpretation	Significant	Significant	Significant
Research and communication	Pearson r	.676	.723	.325
	Sig Value	.001	.000	.003
	Decision on Ho	Reject	Reject	Reject
	Interpretation	Significant	Significant	Significant
Educational Management	Pearson r	.476	.612	.262
	Sig Value	.000	.003	.053
	Decision on Ho	Reject	Reject	Accept
	Interpretation	Significant	Significant	Not Significant

The assessed Assessment and Evaluation association between technological skills and willingness to learn yield a r-value of .876 and a computed value.000, indicate a strong and positive correlation. It may seem to indicate that the more the teachers' manifest competencies in technological skill , the more students are encourage to do better. In terms of technological advancement, the r value of .723 suggest a direct and positive relationship.

The obtained r-value on research and communication with willingness to learn yield r= value of .536 and a significance value of .001 , indicating positive correlation ; and a strong influencing factor on technological advancement based on r-value of .723 with a computed sig value of .000 , and finally a moderate correlation on overall performance based on r=value of .325 with computed sig value of .003. indicated a range of factors that could motivate learning. This means that a deeper motivation with learning is enhanced with communication particular in the use of technology in research that where advanced academic engagement technology is used to improve their overall performance and academic engagement.E-leadership, which could be compared to technological leadership, is defined as a social influence process embedded in both proximal and distal contexts mediated by sophisticated information technologies that results in a change in attitudes, feelings, thinking, and behavior.

The obtained r= value between educational management and learning willingness rate of return is 0.476, and the significance value is 0.001, indicating a positive correlation. Based on the value of r= 0.612, the calculated sig value is 0.003, which has a strong influence on technological progress. Based on the r= value of 0.262, the calculated sig value is 0.053, which has a moderate impact on the overall performance. This means that educational management dimension as a component for technological skill could rely on technology advancement and willingness of the individual to learn. These strategic partnerships involve a world-class operation in the Chinese higher education and research dimensions.

4. Conclusion

A large cross-section of undergraduates participated in the research, providing a detailed portrait of college freshmen at various points in their studies. Even while the older age group is smaller, it may include more advanced students like doctorate candidates and non-traditional learners, which would make the comments more insightful.Teachers successfully use technology into their lessons, as shown by students' positive experiences in the classroom. Students had many positive things to say about their teachers' "Teaching and Learning" and "Research and Communication" skills, which suggests that most teachers are comfortable with and adept at using technology in the classroom. Despite these advancements, there is still need for teachers to improve their technical literacy like assessment and evaluation as well as educational management both scored lower than average, indicating that there is need for improvement and more training in these areas.The willingness to learn is remarkable, and their willingness to use technology to further their education is indicative of a motivated and flexible student population.The study's noteworthy discovery is the perceptional differences between the sexes. This finding calls for a more nuanced examination into the root causes of gender disparities in order to effectively address them.

References

[1] Al-Subaie, O. A., Al-Qahtani. "Technological Leadership in Public Education Schools in the Eastern Province Of The Kingdom Of Saudi Arabia". Ilkogretim Online, vol. 11, no. 3, pp. 216-218, 2020

[2] Alayan, G. A. "School Heads' Technological Leadership and Teachers' ICT Integration in Instruction in the Public Elementary Schools in the Division of Quezon". Education and Develop, vol. 12, no. 4, pp. 366-370, 2021

[3] Cai, Y. "China-europe higher education cooperation: Opportunities and challenges". Frontiers of Education in China, vol. 14, no. 2, pp. 167–179, 2019

[4] Cetin, M. O., Erol, I., & Karaduman, P. "The Opinions of School Administrators on the Teacher Performance Evaluation". Educational Policy and Research, vol. 3, no. 1, pp. 416-422, 2019.

[5] Ho, M. H., Fido, D., & Simonovic, B. "An investigation of the learning motivation of student studying accounting courses in China". International Journal of Learning and Teaching, vol. 17, no. 2, pp. 219–225, 2019

[6] The impact of an augmented reality application on learning motivation of students, [online] Available: https://doi. org/10.1155/2019/7208494