

Factors Affecting the Integration of Teaching Science and Mathematics in Selected Science, Technology, and Engineering (STE) – Implementing Schools in the Philippines

By

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Introduction

- ❖ Proliferation of digital technology in the 21st Century challenged the status quo of educational setting and led to a paradigm shift in teaching and learning processes
- ❖ ICT use and integration in teaching the becomes an essential component of pedagogical processes to have an effective teacher-student interaction and to optimize learning



Method

- ❖ Guided by Will-Skill-Tool model developed by Knezek, et al (2000), this is a predictive model study on the factors affecting the integration of ICT in science and mathematics teaching in the Philippines using multiple linear regression.
- ❖ Respondents were science and mathematics teachers from selected Science, Technology, and Engineering (STE), formerly S&T-oriented schools, in Regions 2, 5, 6, and 11.



Conceptual Framework and Variables Used

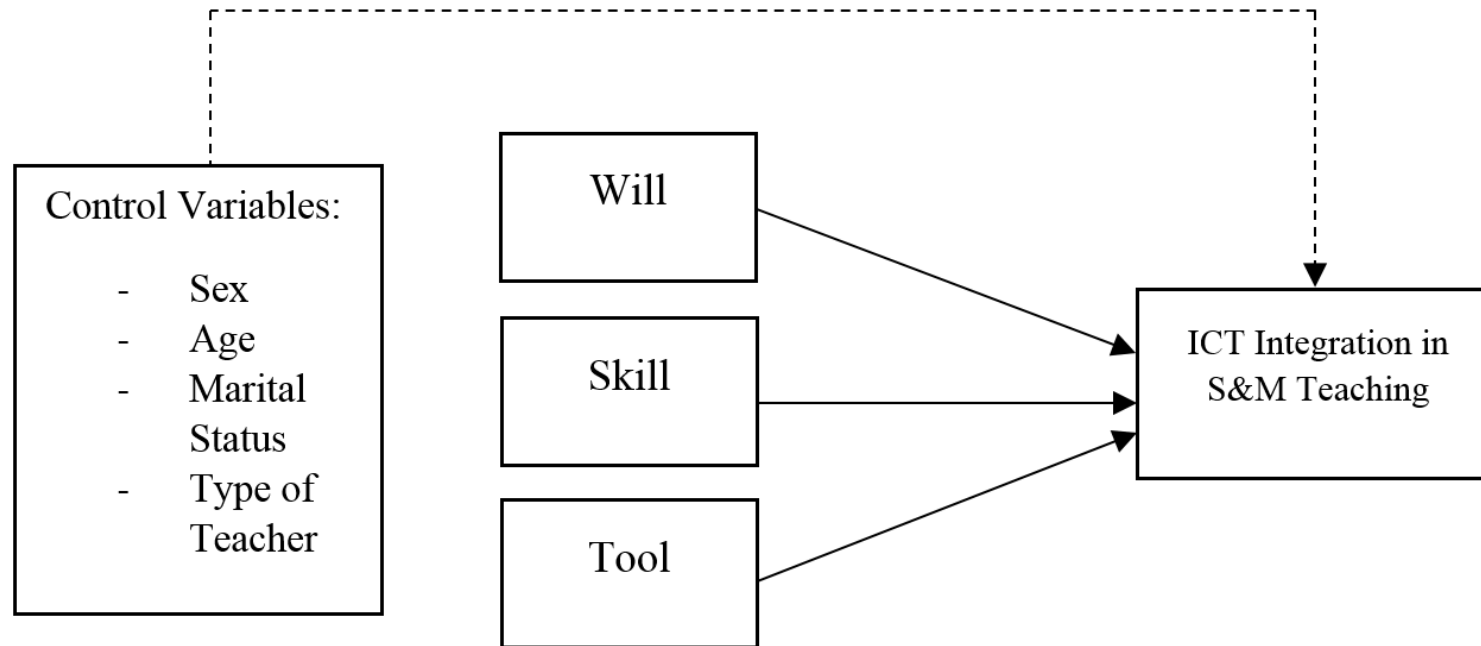


Figure 1. Conceptual Framework in Analyzing the Factors Affecting ICT Integration in S&M Teaching Using WST Model



Results – Variables and descriptive statistics

Variable	Coding/Measurement	Descriptive Statistics
Independent variables: (Demographic Characteristics)		n = 325
Sex	0 = Female 1 = Male	74.5% 25.5%
Age	0 = 41 and above 1 = 40 and below	50.8% 49.2%
Marital Status	0 = Not single 1 = Single	28.3% 72.7%
Type of Teacher	0 = Mathematics Teacher 1 = Science Teacher	49.8% 50.2%



Results – Variables and descriptive statistics

Variable	Coding / Measurement	Descriptive Statistics
Independent variables: (WST Components)		
Will (PS=44) <i>Attitude toward ICT</i>	Continuous	M=36.49; SD=6.79; α =.94
Skill (PS=84) <i>ICT Skills Index</i>	Continuous	M=50.36; SD=22.47; α =.98
Tool (PS=8) <i>Availability of ICT Resources</i>	Continuous	M=5.10; SD=2.19; α =.83

PS = Perfect Score; M = Mean; SD = Standard Deviation; α = Cronbach's Alpha



Results – Variables and descriptive statistics

Variable	Coding	Descriptive Statistics
Dependent variable:		
ICT integration Index (PS=122)	Continuous	M=61.02; SD=19.08; α =.94

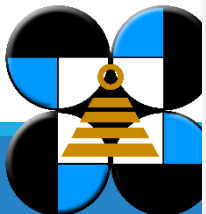
PS = Perfect Score; M = Mean; SD = Standard Deviation; α = Cronbach's Alpha



Results – Regression Models

Table 2
Regression Coefficients of Predictors on ICT Integration Index.

Predictor	ICT Integration Index				
	B	SE B	β	R ²	ΔR^2
<i>Model I</i>				.21	
Constant	47.57	1.72			
Sex (Male=1; Female=0)	4.63	2.22	.11*		
Age (40 & below=1; 41 & above=0)	9.67	1.98	.25***		
Marital Status (Single=1; Otherwise=0)	4.90	2.24	.12*		
Type of Teacher (Science=1; Mathematics=0)	11.91	1.89	.32***		
<i>Model II</i>				.44	.22***
Constant	0.65	4.43			
Sex (Male=1; Female=0)	2.82	1.89	.06		
Age (40 & below=1; 41 & above=0)	8.24	1.68	.22***		
Marital Status (Single=1; Otherwise=0)	6.16	1.91	.15***		
Type of Teacher (Science=1; Mathematics=0)	7.20	1.66	.19***		
Attitude towards ICT	1.37	0.12	.49***		



Results – Regression Models

<i>Model III</i>				.54	.10****
Constant	-0.57	4.04			
Sex (Male=1; Female=0)	1.00	1.74	.02		
Age (40 & below=1; 41 & above=0)	2.50	1.69	.07		
Marital Status (Single=1; Otherwise=0)	4.34	1.75	.10**		
Type of Teacher (Science=1; Mathematics=0)	6.53	1.51	.17****		
Attitude towards ICT	1.08	.12	.38****		
ICT skills index	0.32	.04	.38****		
<i>Model IV</i>				.55	.01*
Constant	-2.73	4.11			
Sex (Male=1; Female=0)	1.52	1.74	.04		
Age (40 & below=1; 41 & above=0)	2.51	1.68	.07		
Marital Status (Single=1; Otherwise=0)	4.05	1.74	.10*		
Type of Teacher (Science=1; Mathematics=0)	6.64	1.50	.17****		
Attitude towards ICT	1.05	0.12	.37****		
ICT Skills index	0.30	0.04	.35****		
Availability of ICT Resources	0.83	0.35	.10*		

****p ≤ .001

**p ≤ .01

*p ≤ .05



Findings and Conclusion

- ❖ The study revealed significant factors/predictors of ICT integration in science and mathematics teaching, which include the following: marital status, type of teacher, attitude toward ICT, ICT skills, and availability of ICT resources.
- ❖ It was concluded, then, that high ICT integration in teaching science and mathematics is more like among, single, science teachers, those with high positive attitude toward ICT, with high ICT skills, and schools with more available ICT resources.
- ❖ Among these significant factors, the attitude toward ICT indicated the highest predictive value, followed by ICT skills.

