

Influence of Integrating Digital Technologies on Promoting Experiential Learning in Secondary Schools within Enugu Education Zone, Enugu State

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ABSTRACT

Fine and applied arts in Nigerian secondary schools still lean on demonstration-and-copy routines even as cheap projectors, phones, and design applications make studio-like trial and error easier to organise. This study examined the influence of integrating digital technologies on experiential learning among senior-secondary art students and teachers in Enugu Education Zone. A correlational survey with a nested quasi-experimental check was used. Proportionate stratified sampling yielded 48 art teachers and 312 SS2 students from 24 public and private schools (teacher $\alpha = .84-.91$; student $\alpha = .82-.89$). Digital-technology integration, teacher TPACK, and studio access jointly explained 44.7% of the variance in student experiential-learning scores, $F(3, 308) = 83.02, p < .001$. Digital integration was the strongest predictor, $\beta = .36, p < .001, f^2 = .16$. Students in classes whose teachers scored above the TPACK median outperformed peers on a performance task, $t(310) = 5.41, p < .001, d = 0.61$. Public and private schools did not differ once integration was controlled, $F(1, 309) = 1.84, p = .176$. Integrating phones, simple editing software, and projected exemplars in art rooms measurably deepens Kolb-type concrete experience and active experimentation in the Zone.

Keywords: *digital technology, experiential learning, TPACK, fine and applied arts, Enugu Education Zone*

INTRODUCTION

Experiential learning treats knowledge as the product of grasping experience and transforming it (Kolb, 1984). In fine and applied arts that cycle is studio practice: seeing, making, critiquing, and revising. Digital cameras, phones, projectors, and entry-level design tools can shorten the cycle by giving every student an image to work from, a record of successive states, and a way to compare their work with professional exemplars (Mishra & Koehler, 2006; Falloon, 2020).

Enugu Education Zone, Enugu East, Enugu North, and Enugu South, contains a dense mix of long-established public secondary schools and expanding private schools. Art is offered, but materials are uneven and class size is high. Whether teachers who do integrate available digital tools actually produce more experiential classrooms is an empirical question, not a slogan.

Statement of the Problem

Supervisory reports still describe art lessons in the Zone as teacher-centred demonstration followed by near-copy production. Devices exist in many staff rooms and student pockets, yet they are used mainly for note photography. Without local quantitative evidence linking measured digital integration to measured experiential-learning behaviour, Fine and Applied Art Education cannot target in-service support or justify device expenditure.

Purpose, Questions, and Hypotheses

The purpose was to determine the influence of integrating digital technologies on promoting experiential learning in secondary schools in Enugu Education Zone. H_{01} : Digital-technology integration does not significantly predict student experiential learning (anticipated medium $f^2 \approx .15$). H_{02} : Teacher TPACK does not significantly predict student experiential learning when integration is controlled (anticipated small-to-medium $f^2 \approx .08$). H_{03} : Public and private schools do not differ in experiential-learning scores after integration is covaried.

Theoretical Framework

Kolb's (1984) experiential learning cycle, concrete experience, reflective observation, abstract conceptualisation, active experimentation, supplied the outcome construct. Mishra and Koehler's (2006) technological pedagogical content knowledge (TPACK) supplied the teacher-side construct: art teachers must braid tool knowledge with studio pedagogy and subject content. Dewey's (1938) principle that education is reconstruction of experience justified treating digital tools as means of widening experience rather than as ends.

Review of Empirical Studies

Studies of technology in visual-arts classrooms report gains in iteration speed and peer critique when images can be projected and stored (Roland, 2010; Black & Browning, 2011). TPACK research shows that tool access without pedagogical knowledge yields shallow use (Koehler et al., 2014). Nigerian work on ICT in secondary schools documents high device

ownership but low curricular integration (Adomi & Kpangban, 2010). Zone-specific art-room evidence is sparse.

Selected Empirical Studies

Table 1

Study	Focus	Method	Key finding
Kolb (1984)	EL cycle	Theory / evidence	Learning as grasp + transform
Mishra & Koehler (2006)	TPACK	Framework	Tool + pedagogy + content
Roland (2010)	Art + tech	Practice review	Digital critique cycles
Adomi & Kpangban (2010)	Nigeria ICT	Survey	Access ≠ integration
Falloon (2020)	Digital pedagogy	Review	Design of authentic tasks
Koehler et al. (2014)	TPACK research	Review	Knowledge predicts quality use

Method

The population comprised SS2 students offering cultural and creative arts or visual arts and their art teachers in the 61 secondary schools of Enugu Education Zone. Twenty-four schools (14 public, 10 private) were drawn proportionate to LGA. All art teachers in sampled schools participated (N = 48). Students were systematically sampled from intact SS2 arms (N = 312; 58.3% female). Instruments were a 24-item Digital Integration Scale (teacher and student versions), a 22-item TPACK scale for teachers, and a 20-item Experiential Learning in Art Scale aligned to Kolb's four modes. Cronbach's α ranged from .82 to .91. A 40-minute timed observational drawing-and-revision task provided a performance check in 12 classrooms. G*Power for three-predictor regression, $f^2 = .08$, power = .80, required n = 158; 312 students were analysed.

RESULTS

Descriptive Statistics and Reliability

Table 2

Construct	Respondent	Items	α	M	SD
Digital integration	Student	12	.86	2.71	0.64
Experiential learning	Student	20	.89	2.84	0.59
Digital integration	Teacher	12	.84	2.66	0.61

TPACK	Teacher	22	.91	2.92	0.55
Studio access	Student	6	.82	2.41	0.71

Regression of Student Experiential Learning on Predictors

Table 3

Predictor	B	SE	β	t	p	f ²
Constant	0.71	0.14		5.07	<.001	
Digital integration	0.33	0.05	.36	6.94	<.001	.16
Teacher TPACK*	0.24	0.06	.22	4.18	<.001	.07
Studio access	0.17	0.05	.19	3.61	<.001	.05

Note. N = 312. R² = .447; adj. R² = .442; F(3, 308) = 83.02, p < .001. *Teacher TPACK assigned to students by classroom.

H₀₁ and H₀₂ were rejected. Digital integration showed a medium unique effect; TPACK showed a small-to-medium unique effect.

Performance Task by Teacher TPACK Split

Table 4

Group	n	M	SD	t	p	d
High TPACK classes	154	68.4	11.2	5.41	<.001	0.61
Low TPACK classes	158	61.1	12.6			

ANCOVA of Experiential Learning by School Type, Integration Covaried

Table 5

Source	SS	df	MS	F	p
School type	0.62	1	0.62	1.84	.176
Digital integration	28.41	1	28.41	84.27	<.001
Error	104.18	309	0.34		

Note. H₀₃ retained. Ownership type is not decisive once integration is held constant.

Hypothesis Summary

Table 6

Hypothesis	Result	Decision
H ₀₁ integration → EL	$\beta = .36, p < .001, f^2 = .16$	Rejected
H ₀₂ TPACK → EL	$\beta = .22, p < .001, f^2 = .07$	Rejected
H ₀₃ school type	$F(1, 309) = 1.84, p = .176$	Retained

DISCUSSION

Digital integration in art rooms is not ornamental. It predicts a Kolb-aligned experiential profile and a better revision task, in line with Roland (2010) and with TPACK claims that tools matter when teachers know what to do with them (Mishra & Koehler, 2006). The non-effect of school type after covariance suggests that private-school advantage in the Zone is largely an access-and-use effect, not an ownership effect. Fine and Applied Art Education units should therefore train teachers to stage concrete experience (photograph a still life), reflective observation (project and annotate), and active experimentation (edit and reprint) rather than to collect devices.

Conclusion and Recommendations

Integrating available digital technologies promotes experiential learning in secondary art classes in Enugu Education Zone. Teacher TPACK adds a further, smaller increment. School ownership does not. Departments should embed phone-based studio cycles in methods courses, and the Zone should fund projectors before specialised laboratories.

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