

RESEARCH ARTICLE

The Role of Teachers' Enthusiasm and Efficacy in Technology Integration in the Relationship between Teacher Training and Intention to Continue Integrating: A Bangladesh Context

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교사 연수와 디지털 기술의 지속적인 통합 의도간 관계에서 교사 열정과 효능감의 역할: 방글라데시를 중심으로

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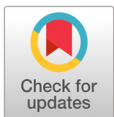
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Abstract

The study investigates the role of teacher experience with student change and their enthusiasm as antecedent factors that predict their continuance intention to integrate technology in the classroom. The Partial Least Squares technique was applied to analyze data from 157 teachers in Bangladesh participating in an international development program. The proposed model showed eight significant hypotheses. The variables of teachers' effort regulation, efficacy on technology integration, teaching enthusiasm, and impact on students significantly influenced continuance intention to integrate technology in the classroom. These factors should be considered when teacher training in international development programs is designed to secure the longer-term effectiveness of aid for education in developing countries. From the finding, we suggest a sustainable framework in the education sector for the effectiveness of international development aid.

Key words: Teacher training, digital technology, Bangladesh, international aid



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Introduction

In the era of digital transformation, developing countries have continuously and nationally embedded digital technology innovation in the education sector to ensure inclusive and equitable education, along with providing lifetime learning opportunities for all citizens (Kalolo, 2019; Lim et al., 2018). Education is an essential enabler in social development, influencing economic growth, poverty reduction, and sustainable development, and empowering people within a society (Lim et al., 2018; Semenets-Orlova et al., 2021; Sung et al., 2020). Thus, integrating digital technology into school education can act as a driving force for a country's innovation and development to empower its citizens. Both developed and developing countries have made efforts to equip schools with digital facilities and tools to build digitally integrated classrooms to achieve educational goals (Abedalaziz et al., 2013; Balanskat et al., 2006; Lim et al., 2018). Developing countries have emphasized the role of digital technology in enhancing the teaching and learning processes through building digital infrastructure, digital capabilities of students and teachers, technology-related resources, and funding and policies to innovate education sectors (Lim et al., 2018; Miah & Omar, 2012).

For international development for education to be effective and sustainable, a differentiated approach should be considered, which focuses on a localized and simultaneous enhancement of digital tools, educational resources, and teachers' capabilities (Passey et al., 2016). The developing countries have suffered financially, economically, and technologically at the initial stages and face challenges and obstacles to adopting digital learning environments in education institutions (Kashada et al., 2018). To materialize the support in school education, teachers' abilities to use digital infrastructure and tools for integrating into their instruction should be enhanced with a long-term development agenda and plans for professional development. Even at schools with adequate technology access, a lack of sufficient and effective teacher training makes it difficult to increase the level of technology integration in the classrooms (Harrell & Bynum, 2018). To enhance teacher capabilities, support for developing countries tends to center on how technology is used for digital literacy (Selinger, 2009). Yet, it is necessary to sustain teacher capabilities (e.g., digital readiness, technology integration) in using digital technologies in the classroom by studying attributes, including attitude, affects, and motivation, as mediators to increase technology integration for the sustainable development of developing countries (Harrell & Bynum, 2018; Jhuree, 2005; Kihzoa et al., 2016).

This study intends to understand teachers' sustainable adoption of technology in the classroom during designing and performing an international development program in Bangladesh. Based on the findings of the study, we propose a framework for teacher training considering determinants of information technology integration, the context in developing countries, and the effectiveness of international development. It is worth considering teachers' internal or external factors within a recipient country's education system. To account for the effective and sustainable implementation of digital technology, this study examines the relationship between teachers' experience of technology use, teacher readiness, and the attitude toward sustaining and integrating technology in the classroom.

The degree of integration of technology into teaching methods is significantly influenced by teachers' changes in behavior (Backfisch et al., 2021). To understand the circumstances of teacher behavioral change for integrating technology, it is required to evaluate the dynamics of subcomponents to alter their behaviors. Teachers must be adequately motivated, can accomplish the behavior, and be engaged to perform the desired behavior (Fogg, 2009). The transformation toward sustainable integration in the classroom will occur when instructors are motivated and know

how to digitize their teaching materials, deliver their teaching practices, and integrate technology into teaching practices (Jhuree, 2005; Tondeur et al., 2016). Thus, the use of digital technologies by teachers needs to be analyzed in terms of the relationship between their experiences, motivation, and abilities related to the sustainable integration of digital technologies for teaching practices.

Research Model and Hypotheses

Continuance Intention to Integrate Technology

Continuance intention is the degree to which a person is willing to continue using technology (Bhattacharjee, 2001). Teachers' continuance intention to integrate technology in classroom instructions is associated with their satisfaction with the use of technology in their teaching (Bai et al., 2019). Typically, teacher satisfaction is associated with students' academic accomplishments that present positive outcomes, such as a positive change in behaviors, achievement, and attitudes (Nir & Bogler, 2008).

Teachers' Readiness for Integrating Technologies

Teachers' readiness in adopting digital technologies is an important aspect to consider in promoting a positive impact on students' learning by building effective digital learning environments (Hung, 2016; Kaushik & Agrawal, 2021; Tiba & Condy, 2021). Digital teaching and learning in education have increasingly been viewed as an essential part of global development frameworks to enable positive changes in education systems and learning environments (Lim et al., 2018). Teachers' digital readiness includes their digital competencies with skills, knowledge, attitudes, and strategies to integrate digital technologies into teaching and learning in technological and pedagogical dimensions (Lucas, Bem-Haja, Siddiq, Moreira, & Redecker, 2021). In digital learning environments, teachers should use digital settings creatively, critically, and meaningfully, and be responsible for students' positive change (Lucas et al., 2021).

Teachers' Perceived Training Effect for Technology Use

Developing teachers' capabilities via teacher training is one of the most effective means of enhancing student learning (Wolf & Peele, 2019). Strengthening teaching abilities via teacher training was an effective way of enhancing educational quality, particularly in developing countries (Masino & Niño-Zarazúa, 2016; Spiteri & Chang Rundgren, 2020). The effectiveness of teacher training is a critical determinant to positively strengthen the impact of international aid in learning (Riddell & Niño-Zarazúa, 2016). Rather than building a direct causal connection between the aid and quality of educational outcomes, development projects for aiding education focus on increasing the number of results from aid interventions, by mainly relying on numerical indicators such as enrolments, attainment, and sex parity (Riddell & Niño-Zarazúa, 2016; UNESCO, 2011). Effective teacher training on integrating technology into teachers' instruction includes providing teachers with repeated training experiences linked to pedagogical approaches (Evans & Popova, 2015). However, short and irregular teacher training focusing on the use of devices did not clarify either the desire to continue or the actual integration of digital technologies in the classroom (Kim et al., 2019). Based on these arguments, we propose the following:

H1. Teachers' perceived training effect positively influences their effort regulation for technology integration.

H2. Teachers' perceived training effect positively influences their readiness for technology integration in the classroom.

Teacher's Efforts in Regulation for Technology Integration

Teacher's effort regulation as learning behavior is the key component to sustain the effect of teacher training in teaching practices, which is an internal management strategy of teacher's cognitive resources including attention regulation, persistence, and hard work on a deep level (Bai et al., 2019). Teachers' engagement in integrating technology should be associated with their continuance intention of technology adoption. Teachers who have motivational beliefs in the positive effect of technology integration can be improved their experience and practice through effort. In contrast, teachers who experience difficulties tend to easily withdraw their effort (Bai et al., 2019). Teachers need to manage and control their effort in integrating technology into the classroom. Moreover, teachers need to continue their learning on technology integration in the classroom.

H3. Teachers' effort regulation positively influences their readiness for technology integration in the classroom.

H4. Teachers' effort regulation positively influences their enthusiasm for integrating technology.

H5. Teachers' effort regulation positively influences their continuance to technology integration.

Teachers' Enthusiasm for Technology Integration

Teacher enthusiasm is emphasized as one of the key conditions for effective and high-quality instruction in the classroom such as expressing their interest in the subject and valuing learning behaviors and materials (Kunter et al., 2011). Teachers' enthusiasm seems to be systematically and positively associated with student engagement in learning topics and student willingness to learn and learning outcomes (Kunter et al., 2011; Patrick et al., 2000). Teachers' enthusiasm shapes their teaching practices with technology (Ertmer et al., 2012). Teachers are professionals who are passionate about their teaching and know content knowledge and pedagogical skills for their students and learning (Day, 2009). Sustaining teachers' enthusiasm is associated with their commitment to teaching related to their professional self-concept and their ability to promote big improvement in student learning (Day et al., 2007). Teachers as passionate beings tend to express enthusiasm, enact in a principled, value-led, and intelligent way, believe that they can make a difference in their student's learning, and share their interests in the subject with their colleagues (Day, 2004; Olson, 2003; Rampa, 2012). Based on Day's discussion on teachers' passion (Day, 2004, 2009; Day et al., 2007), teachers who are passionate about technology integration in teaching and learning will express enthusiasm, commitment, and interest in technology in teaching practices. Thus, a passionate teacher will create an effective environment to integrate technology, increase students' learning with technology, and share their teaching experiences with colleagues by motivating and inspiring them.

H6. Teachers' readiness for technology integration in the classroom positively influences their enthusiasm for technology integration.

H7. Teachers' enthusiasm for technology integration positively influences their perceived impact on students with technology integration.

Impact on Students' Positive Change

Teachers in rural and underserved schools in developing countries tend to show low levels of self-efficacy and negative attitudes toward teaching and integrating technology into the instructions (Kim & Jang, 2020). One of the antecedents to predict teachers' positive perceptions of technology integration and using technology in their instruction, is to observe students' positive change in learning experiences with teachers' efforts to enhance their instruction under a low level of teacher efficacy. According to Kim and Jang (2020), teachers' intention of integrating technology is mediated by teachers observing students' positive change in learning experiences. Therefore, we propose:

H8. Teachers' perceived impact on students' positive change positively influences their continuance intention for technology integration.

Methods

Participants

In the study, 76.4%(n=120) of participants were male and 23.6% (n=37) were female. The education level of participants is summarized in Table 1. Of the 157 participants, 66.3% (n=104) of participants had completed a master's degree, 29.9% (n=47) had completed a bachelor's degree, and 3.8% (n=6) had received a high school diploma. Among them, 61% (n=94) participants taught information technology, 3.9% (n=6) mathematics, 6.5% (n=10) science, 16.9% (n=26) language, and 11.7% (n=18) taught other subjects.

Table 1. Background information

		n	%
Sex	Male	120	76.4%
	Female	37	23.6%
Level of education	1. High school diploma	6	3.8%
	2. Bachelor's degree	47	29.9%
	3. Master's degree	104	66.3%
Major subject to teach	1. IT	94	61.0%
	2. Math	6	3.9%
	3. Science	10	6.5%
	4. Language (Bengali, English)	26	16.9%
	5. other	18	11.7%
Level of ICT expertise	1. Beginner	16	10.2%
	2. Intermediate	84	53.5%
	3. Expert	57	36.3%

Context

Considering the present priority of the Government of Bangladesh, on behalf of the Government of Korea, Korea International Cooperation Agency (KOICA) Bangladesh Office as the government aid agency implemented a project called “Establishment of IT labs in secondary schools in Dhaka district” during 2012 -2014 with \$3.53million. The objective of the project was to provide learning opportunities for computer literacy and ICT education by establishing IT labs in secondary schools in the Dhaka district and to strengthen the ICT capacity for computer teachers in the Dhaka district by providing ICT application education training courses. The project provided equipment, remodeling of the classroom, capacity building through training, and dispatch of Korean experts. Accordingly, Information technology (IT) labs in 100 secondary government schools in Dhaka were established. A total of 200 teachers also underwent a training program for two weeks over a period of two and a half months. The mentioned training aimed to strengthen IT knowledge, such as operating systems, PowerPoint presentations, excel, word, and server maintenance that would help the teachers to provide advanced IT knowledge to the students.

Through this project, IT practice has been possible in the multimedia rooms, and it was observed that other courses were actively using multimedia facilities to enhance educational effectiveness. However, after about four years of completion of the project, much equipment in the mentioned computer labs was gone out of order due to extensive long-time use, the software (Multipoint Server) became corrupted and nonfunctional, the number of trained teachers was also reduced significantly due to their job switching for better opportunities. As a result, in the year 2018-2019, KOICA, Bangladesh undertook a follow-up project to replace the non-functional equipment with new ones and provide refresher training to the teachers of the same schools for six days.

Since most of the teachers were already trained by KOICA and their background knowledge was ICT-based, it was assumed with the refresher training the teachers would be advanced users of ICT and proficient to deliver IT knowledge to the students. The training program was conducted from 15 October 2019 to 30 October 2019 and 156 Teachers attended from 100 schools.

Measures

After the training program was carried out, an online survey with a structured questionnaire was conducted and a total of 157 teachers responded. This survey was for teachers with experiences using Information Technology Labs (IT lab) to improve computer literacy and ICT knowledge for students in Dhaka. The questionnaire covered questions on teachers’ experiences, teacher technology readiness (innovativeness), teacher readiness to integrate technology, teaching enthusiasm, effort regulation, learning transfer self-efficacy, continuance intention, impact on students, and impact on the school.

The measures were adapted from previous studies. Teachers’ perceived effect of IT Lab experiences was assessed by items developed by the scale for teachers’ readiness to integrate technology, which was adapted from Lowther et al. (2012). The scale for teachers’ perceived teaching enthusiasm and technology-integration enthusiasm is based on the scale of Kunter et al. (2011). Teachers’ learning behavior regarding technology integration was measured by effort regulation (Bai et al., 2019). Impact on students was adopted by Lowther et al. (2012). Continuance intention to

integrate technology was measured by items adapted from Bai et al. (2019). All items of the scales were rated with a Likert scale that ranges from (1) = strongly disagree to (5) = strongly agree. The survey items are presented in Appendix 1.

Data Analysis

To examine the validity of the research model, we verified the proposed hypotheses using Partial Least Squares-Structural Equation Modeling (Hair et al., 2017, PLS-SEM). PLS-SEM is more suitable for testing theoretical frameworks with fewer statistical assumptions, such as multivariate normality assumptions, smaller sample sizes than structural equation modeling, and measurement scales (Hair et al., 2017). In multivariate analysis recommended at least 10 cases per candidate predictor, a small sample size, such as the total of 157 respondents with the current research model, frequently violates the assumption of multivariate normality and generates lower levels of statistical power (Hair et al., 2017; Kock, 2019). To avoid violations of the assumptions for the study, we adopted PLS-SEM using SmartPLS 3.3 (Ringle et al., 2015). The study used composite reliability, Cronbach's alpha, Rho_A, and average variance explained (AVE) to assess the scale's reliability and validity. Also, Fornell-Lacker's (1981) criteria and cross-loadings were used for scale validity. PLS algorithm and bootstrapping were used to test the hypotheses.

Results

The measurement model in the study ensures whether the constructs' measures are reliable and valid before examining the structural model. Table 2 shows Cronbach's Alpha, composite reliability (CR), average variance extracted (AVE), and Rho_A. CR and Cronbach's alpha was higher than .7 (Henseler et al. 2009), confirming the internal reliability of each factor in the model. All factor loadings were higher than 0.7 (Hair et al., 2016), meaning the sufficient validity of each factor to develop a research model, ranged from 0.733 to 0.925. Factor loadings show that items loadings well on each construct, which means adequate convergent validity. Also, AVE was higher than the recommended value of 0.5 which indicates good convergent validity (Hair et al., 2017). All constructs are appropriate to build the measurement model.

As Table 3 shows, we obtained suitable values for discriminant validity using the heterotrait-monotrait ratio of correlations (HTMT) to ensure that measurement items of a construct are related more strongly to the construct and not to other constructs. The results in Table 3 show that all the HTMT values were under .85 (Hair et al., 2017), which means the constructs were distinct from each other.

The constructs in the measurement model were reliable and valid to assess the structural model, which confirms the relationships among constructs and tests the hypotheses. Before the structural model, the variance inflation factor (VIF) values were assessed collinearity issues among the predictors in the model. The VIF values ranged from 1.000 to 2.412 that less than 4, indicating the estimated coefficients of the model were not influenced by multicollinearity (Hair et al., 2017). The relationships in the research model were analyzed with the bootstrapping procedure using 500 subsamples. Table 4 and Fig.1 summarize the structural model and the results of the hypotheses that all the hypotheses were supported by the data.

Table 2. Cronbach's Alpha, Composite reliability, and AVE

Construct	Cronbach's alpha	Rho_A	Composite reliability	Average Variance Extracted (AVE)	R-Squared Adjusted
Effect of training (ET)	0.877	0.879	0.925	0.803	
Effort regulation (ER)	0.858	0.871	0.898	0.640	0.449
Enthusiasm (EN)	0.883	0.893	0.915	0.683	0.643
Impact on students (IS)	0.787	0.801	0.875	0.700	0.273
Technology integration (TI)	0.858	0.890	0.903	0.700	0.445
Continuance intention (CI)	0.892	0.907	0.925	0.757	0.459

Table 3. Results of discriminant validity (HTMT criterion)

Constructs	1	2	3	4	5
Effect of training (ET)					
Effort regulation (ER)	0.770				
Enthusiasm (EN)	0.905	0.887			
Impact on students (IS)	0.628	0.659	0.626		
Technology integration (TI)	0.640	0.723	0.694	0.498	
Continuance intention (CI)	0.648	0.633	0.664	0.738	0.440

Table 4. Bootstrapping results

path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1 Effect of training→ Effort regulation	0.673	0.670	0.068	9.838	0.000	Supported
H2 Effect of training→ Technology integration	0.259	0.249	0.085	3.027	0.003	Supported
H3 Effort regulation→ Technology integration	0.470	0.477	0.076	6.213	0.000	Supported
H4 Effort regulation→ Enthusiasm	0.643	0.643	0.064	10.017	0.000	Supported
H5 Effort regulation→ Continuance intention	0.315	0.331	0.095	3.306	0.001	Supported
H6 Technology integration→ Enthusiasm	0.223	0.217	0.067	3.302	0.001	Supported
H7 Enthusiasm→ Impact on students	0.527	0.546	0.110	4.784	0.000	Supported
H8 Impact on students→ Continuance intention	0.458	0.450	0.090	5.071	0.000	Supported

Note: ** $p < 0.01$, * $p < 0.05$

Table 5. Bootstrapping results: Specific indirect effects on continuance intention to integrate technology

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
ET → ER → EM → IS → CI	0.104	0.104	0.030	3.495	0.001
ET → ER → TI → EM → IS → CI	0.017	0.016	0.007	2.556	0.011
TI → EM → IS → CI	0.054	0.052	0.020	2.699	0.007
ET → TI → EM → IS → CI	0.014	0.013	0.008	1.820	0.069
ER → TI → EM → IS → CI	0.025	0.025	0.010	2.514	0.012
EM → IS → CI	0.241	0.241	0.056	4.294	0.000
ER → EM → IS → CI	0.155	0.155	0.040	3.853	0.000
ET → ER → CI	0.212	0.220	0.061	3.469	0.001

Note. ET=effect of training; ER=Effort regulation; TI=Technology integration; EM=Enthusiasm; IS=Impact on students; and CI=Continuance intention

The result of the final model is represented in Fig. 1. The final model is highly recommended for validating the research model comprised of hypotheses based on related theories and prior investigations. Also, the R-squared value of the model were presented in Fig. 1. The results show that the R-squared values of Effort Regulation, Enthusiasm, Impact on Students, Technology Integration, and Continuance Intention were 0.449, 0.643, 0.273, 0.445, and 0.459 respectively.

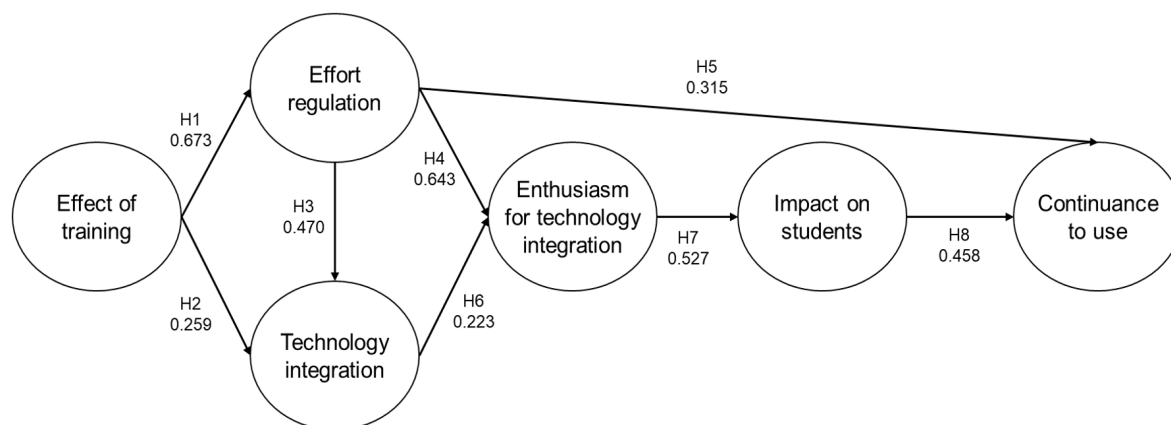


Fig. 1. Final model

Discussion

This study empirically tested a research model to enhance the sustainable adoption of technology that can be employed in international development projects in the education sector. When an international development agency designs and implements support programs for digitally enhanced schools in developing countries, teachers should be able to experience positive changes in students, which significantly impacts their continuance intention to integrate digital technology in teaching. Hence, it is crucial to design teacher training programs so that teachers can internalize the effect of technology integration on teaching students. Further, the use of digital technology in schools is performed actively and practically when the teacher's internal and external motivations are well-aligned.

To ensure that teachers in developing countries continue to use digital technology, a continuous serial approach is needed after installing digital labs in schools. First, it is necessary for teachers to increase the adaptability to use technology, learn from exemplar cases of other digital technology integration examples in classrooms, and strengthen their own experiences of using digital technology in classroom instruction. Through this process, teachers must experience positive changes in students resulting from technology integration, subsequently leading to continuity in use. When international development agencies pursue models for teachers integrating digital technology in the classroom, teacher training should be well-designed and consider teachers' motivation. This involves checking the level of teachers' experiences and skills through on- and off-line courses and taking a step-by-step approach described above.

The intrinsic motivation of teachers is a critical aspect of improving educational effectiveness when teachers integrate digital technologies. Above all, digital transformation in schools starts with teachers. In developing countries, international development programs would benefit from designs that strengthen teacher's internal motivations and provide financial support centered on external motivation and national policy, such as the Sheikh Russel Digital Lab (Government of Bangladesh, 2022) which is a flagship project of the Government of Bangladesh for meeting the demand of Digital Bangladesh. As stated by Wang et al. (2021), intrinsic motivation seems more powerful and likely continues to make teachers share innovative teaching behaviors rather than external motivation, suggesting that teacher training programs need a strategic approach to add a motivation factor (see Fig. 2).

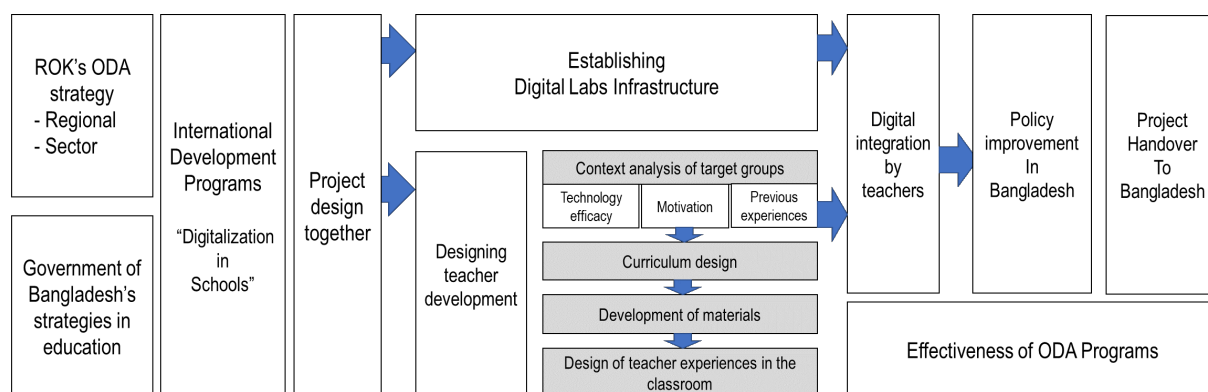


Fig. 2. A suggestive process of implementation of the integration of digital technology in the ODA programs

The case study of digitalization in schools was initially devised under close coordination of KOICA and the government of Bangladesh's national development priority, which was suggested by Lewin (Burnett et al., 2022). In addition to establishing the infrastructure of digital labs, the project emphasized the professional development of teachers responsible for digital technology integration in the schools. The findings of this study confirmed the importance of teachers' internal motivation in sustaining technology integration experiences. When teachers observed students' learning outcomes resulting from innovative teaching practices integrating digital technology, they were more likely to continue digital integration in their subsequent instructions. As indicated by the shaded boxes in Fig. 2, the findings can be represented as an enhanced procedure in the existing implementation process of teacher training that integrate digital technology. Even after the project was concluded and handed over to Bangladesh, teachers who witnessed the effect of technology integration on their students were likely to continue their teaching practices. Thus, the effectiveness of ODA programs is secured.

Teachers need continuous training courses to use digital technology in class. In Bangladesh, in-service teacher training is limited to a few teachers and is prone to irregular schedules (Chowdhury & Sarkar, 2018). In addition, teacher training for digital device integration did not occur sufficiently, therefore, even if digital classrooms are supplied with a development program, teacher training also needs to be provided continuously. Since continuous support and hands-on experiences are important, it is effective to frequently conduct this training through external agencies or institutions,

even for a short time, and to provide teachers with opportunities to apply their experiences to classroom instructions in the long term. Teacher training on using digital technology, as well as its integration, should be conducted continuously and regularly, and through this subsequent training, teachers should be able to learn how to apply digital technologies to various subjects and integrate them with instructional strategies.

The process of applying digital technology to classes requires appropriate internal and external support strategies that can improve the level of teachers' motivation according to the research results. Sometimes, international development programs may not be allowed to provide direct incentives to teachers (e.g., KOICA Policy). Therefore, it is necessary to consider administrative and financial support (e.g., honor, credit, etc.) methods that can function as incentives for teachers to voluntarily participate in continuous training programs. When planning teacher training to strengthen the active use of digital technology in the digital labs, it is effective to analyze the compensation system of teachers in those countries, prepare specific rewards tailored to countries and regions, and provide textbooks in local languages.

Conclusion

In conclusion, international development programs in school digitization have shifted from aiding in the delivery of digital devices and monetary resources to aiding in the provision of educational assistance for teachers through teacher training. In the programs, teachers' internal motivation should be taken into consideration while creating and conducting regular teacher training to maintain and effectively integrate digital technology in the classroom. A future study will expand the study group to investigate the generalization of the model in the context of developed countries and background information. Regarding teachers' ongoing integration, further factors, such as interactions with social components and personality traits, can also be addressed.

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Appendix

Table 1. Internal reliability of the constructs

Construct	Items	Loading	CR	AVE
Effect of training in IT Labs	Overall, how satisfied are you with using digital devices and equipment in the IT Labs for your instructions?	0.661		
	I have suitably used digital devices and equipment in the IT Labs for the instructional purpose.	0.894	0.760	0.618
Effort regulation (Bai, Wang, & Chai, 2019)	I make good use of my time to use technology in my teaching.	0.871	0.898	0.638
	I spend much time on technology tools.	0.821		
	I find that I concentrate on using technology tools.	0.844		
	I work hard to use technology tools well even though I don't like them.	0.718		
	Even when technology tools are difficult to use, I will not give up.	0.730		
Teacher Readiness to Integrate Technology (Lowther, Inan, Strahl, & Ross, 2012)	I know how to meaningfully integrate technology into lessons.	0.878	0.903	0.701
	I can align the use of technology with my district's standards-based curriculum.	0.897		
	I have received adequate training to incorporate technology into my instruction.	0.757		
	My computer skills are adequate to conduct classes that have students using technology.	0.808		
Teaching enthusiasm for technology integration (Kunter, Frenzel, Nagy, Baumert, & Pekrun, 2011)	I teach technology-integrated instruction with great enthusiasm.	0.779	0.915	0.684
	I really enjoy teaching technology-integrated instruction in the class.	0.868		
	I always enjoy teaching students new things.	0.913		
	I enjoy interacting with students.	0.714		
	It's a pleasure to teach.	0.847		
Impact on students (Lowther et al., 2012)	The use of classroom technology has increased the level of student interaction and/or collaboration.	0.802	0.861	0.609
	The integration of classroom technology has positively impacted student learning and achievement.	0.809		
	Most of my students can capably use classroom technology at an age-appropriate level.	0.677		
	The use of classroom technology has improved the quality of student work.	0.825		
Continuance intention (Bai, Wang, & Chai, 2019)	I will continue to learn and use technologies to facilitate my teaching in the future.	0.890	0.925	0.757
	I will continue to use technology as a tool for my teaching in the future.	0.901		
	I expect to continue using technologies in my teaching in the future.	0.920		
	I will likely continue using technologies in my teaching in the future.	0.759		