Promoting Digital Literacy Through University Social Responsibility: A Case Study of an International Scratch Workshop

Soo Kum Yoke[1], Tuan Sarifah Aini Syed Ahmad[2*], Sarahiza Mohmad[3], Zhang Yaqiu[4]

[1,2,3]Universiti Teknologi MARA Cawangan Negeri Sembilan Kampus Rembau, Negri Sembilan, Malaysia

[4]Heilongjiang University of Finance and Economics, Harbin, China

***Corresponding Author**

DOI: https://dx.doi.org/10.47772/IJRISS.2026.100300047

Received: 11 March 2026; Accepted: 16 March 2026; Published: 25 March 2026

ABSTRACT

Programming and multimedia tools have become essential to education as they offer opportunities to foster creativity, computational thinking, and problem-solving skills. Scratch is a block-based visual programming language which has been widely adopted to introduce coding concepts in an engaging and accessible manner. However, students with limited programming experience often face challenges in adopting such technologies due to low digital literacy, limited confidence, and anxiety toward unfamiliar tools. The objectives of the study were to assess the change in participants' familiarity, interest, and confidence in using Scratch for interactive multimedia development before and after the workshop, to examine participants' acceptance of Scratch for interactive multimedia development post-workshop, specifically applying the constructs of the Technology Acceptance Model, and to determine the relationships among perceived ease of use, perceived usefulness, attitude towards use, motivation, and preference for using Scratch following the workshop. The study employed a quantitaive method by using a questionnaire as the instrument for data collection. The sample consisted of 37 undergraduate students from Heilongjiang University of Finance and Economics, Harbin, China. The students were exposed to Scratch through a university social responsibility workshop which was conducted at the university. The findings demonstrated that there was a positive change in participants' familiarity, interest, and confidence in using Scratch for interactive multimedia development after the workshop. They also perceived Scratch as user-friendly and beneficial for developing interactive multimedia projects, and they expressed positive attitudes toward continued use and recommendation to peers. The correlation analysis demonstrated strong positive relationships between PEU, PU, and ATU with motivation and preference, underscoring the importance of these constructs in technology adoption. The study highlights the effectiveness of structured interventions in enhancing digital literacy and fostering sustained engagement with educational technologies.

Keywords: Scratch, Technology Acceptance Model, acceptance, motivation

INTRODUCTION

University Social Responsibility (USR) programmes have become increasingly important in higher education institutions as they extend their academic expertise beyond institutional boundaries. Such programmes support universities in fulfilling their social responsibilities by promoting international collaboration, facilitating knowledge exchange, and strengthening engagement with diverse academic communities (Jones et al., 2021; Saaida, 2023). Through structured USR initiatives, universities can contribute to institutional and skills development in partner institutions, particularly in response to evolving educational and technological demands.

In recent years, USR initiatives have gained prominence within the context of internationalization in higher education. These initiatives not only enhance cross-border academic cooperation but also promote intercultural understanding and shared pedagogical practices. Collaborative programmes between universities from different

national and educational systems offer opportunities to address common challenges in teaching and learning, especially in areas related to digital transformation and innovation.

In line with these developments, a USR programme was established through the signing of a Memorandum of Understanding (MoU) between a public university in Malaysia and a higher education institution in China. The increasing trend of Sino–Malaysian cooperation in higher education reflects a shared commitment to academic exchange, capacity enhancement, and collaborative knowledge production (Wang, 2025; Zhai et al., 2023). This partnership provided a formal platform for the implementation of joint academic and educational initiatives under the USR framework.

As an initial activity to operationalize this collaboration, a workshop entitled "Introduction to Scratch for Developing Interactive Multimedia" was conducted for undergraduate participants at the host university. The workshop was designed to introduce students to fundamental digital literacy skills and basic computational thinking through hands-on engagement. Such practical workshops are particularly relevant in contemporary education, where digital competencies are increasingly viewed as essential graduate attributes.

Objectives of the Study

The objectives of this study are as follows:

1. To assess the change in participants' familiarity, interest, and confidence in using Scratch for interactive multimedia development before and after the workshop.
2. To examine participants' acceptance of using Scratch for interactive multimedia development post-workshop by applying the TAM.
3. To determine the relationships among perceived ease of use, perceived usefulness, attitude towards use, motivation, and preference for using Scratch following the workshop.

LITERATURE REVIEW

The landscape of higher education increasingly emphasizes the role of universities beyond traditional teaching and research, incorporating a robust commitment to University Social Responsibility. This commitment often involves extending academic expertise, fostering international collaboration, and engaging with communities to promote knowledge exchange and skills development (Jones et al., 2021; Saaida, 2023). Several studies highlight that USR programmes are crucial for capacity building and addressing contemporary educational and technological needs, particularly in developing contexts (Ahmad & Awang, 2025).

University Social Responsibility and its Evaluation

The concept of USR has evolved to include "global social responsibility," encouraging universities to work with international partners to contribute to both national prosperity and sustainable global communities (Jones et al., 2021). Research indicates that USR efforts can significantly contribute to sustainability and improve university performance worldwide (Alsrehan, 2025). However, evaluating the effectiveness and impact of these diverse initiatives presents significant challenges. Many existing assessment models and indicators are primarily designed for developed countries, often failing to adequately capture the unique social problems and contexts of developing countries (Moghadam et al., 2021).

This necessitates the development of proportional assessment models and appropriate indicators that reflect local realities (Castro et al., 2022; Moghadam et al., 2021). Scholars emphasize the need for robust evaluation instruments and frameworks for assessing social responsibility in higher education, with efforts ongoing to develop self-assessment tools and sustainability indicators for university-community engagement programmes (Basheer et al., 2025). Moreover, some studies reveal a variance in the extent to which university leaders and stakeholders recognize and implement social responsibility practices (Latif, 2018). Recognizing this potential, UiTM has embraced USR as a platform to promote technology in education. In 2025,

International Collaboration and Digital Skills Training

International collaborations are increasingly recognized as critical for advancing social change, especially for institutions in developing countries. Such partnerships provide access to global expertise, facilitate faculty mobility, and enable joint research efforts, thereby enhancing the quality of teaching and research (Saaida, 2023). The growing Sino-Malaysian higher education cooperation, for instance, exemplifies these mutually beneficial academic exchanges (Wang, 2025; Zhai et al., 2023).

These collaborations often extend to digital literacy training programmes, which are vital for developing digital skills and fostering more inclusive and participatory ecosystems (Choudhary & Bansal, 2022). In developing countries, these programmes typically target populations with lower skill and education levels, focusing on essential digital competencies such as information-seeking and communication (Chaker, 2020; Choudhary & Bansal, 2022).

Initiatives aimed at empowering specific demographics, like the DI-Girls programme for out-of-school girls in Malaysia, underscore the importance of tailored digital skills training to address socioeconomic challenges (Hamdan et al., 2024).

Scratch Programming for Digital Literacy and Computational Thinking

Scratch, a visual programming platform widely used in educational contexts. It was selected as the focus of the workshop due to its accessibility and pedagogical effectiveness. Previous studies have shown that Scratch supports the development of essential digital skills, encourages creativity, and promotes collaborative problem-solving through experiential learning (Falcinelli & Moscetti, 2021). By integrating Scratch into the USR programme, the initiative sought to provide participants with meaningful exposure to interactive multimedia development while reinforcing the broader objectives of international academic collaboration and social responsibility.

In line with global educational trends, the development of digital literacy and computational thinking skills has become a priority across all educational levels. Computer programmes like Scratch are widely recognized for their pedagogical value in achieving these objectives. Studies demonstrate Scratch's effectiveness in developing computational thinking among students, including those in higher education (Agbo et al., 2019; Roméro et al., 2017).

For instance, prior exposure to Scratch has been shown to improve the learning of professional programming languages and increase students' self-confidence in digital tools (Menon et al., 2020). Research also confirms Scratch's usefulness in fostering experimentation, debugging skills, and collaborative problem-solving, making it an engaging tool for digital skill acquisition (Roméro et al., 2017). While much of the early research on Scratch focused on K-9 education, its application extends to pre-service teacher training, where it is used to evaluate computational thinking skills and prepare future educators to integrate programming into their curricula (Montiel & Gomez-Zermeño, 2021; Agbo et al., 2019).

Technology Acceptance in Educational Settings

TAM was developed by Davis (1989) and later refined (Davis et al., 1989). According to Davis et al. (1989), it is rooted in the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Figure 1 explains the construct in the refined TAM which emphasizes that users' acceptance of technology is primarily determined by perceived usefulness and perceived ease of use, which shape attitudes, behavioral intentions, and ultimately actual system use (Davis et al., 1989).

Adapted from TRA, it focusses on cognitive beliefs rather than broader social norms and was later extended to incorporate constructs such as subjective norms and perceived behavioural control from TPB. Davis (1989) demonstrated that perceived usefulness has a stronger direct effect on behavioural intention than ease of use, though ease of use indirectly enhances usefulness perceptions. TAM remains one of the most influential models in information systems for predicting user acceptance of new technologies.

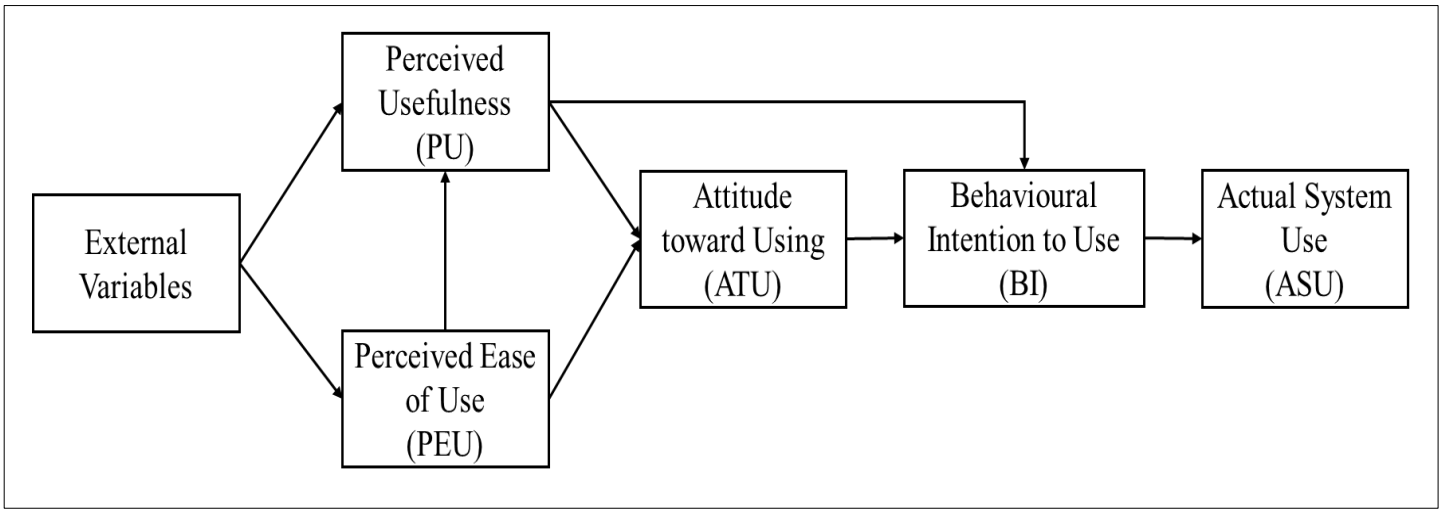

Figure 1 Technology Acceptance Model (Davis et., 1989)

The successful integration of any new technology, including educational programming tools like Scratch, depends heavily on user acceptance. The Technology Acceptance Model, originally proposed by Davis, has become a predominant framework for understanding user acceptance of information technology (Hsiao & Tang, 2025). In the educational context, a vast majority of studies explore the validity of TAM and its various extensions (Granić, 2025; Granić & Marangunić, 2019). Researchers have utilized TAM to explain the intention to use technology among educational users, such as pre-service teachers, finding it to be an effective predictive model (Teo & Noyes, 2010). Meta-analyses further confirm that TAM generally explains technology acceptance well within educational settings, though the specific roles of certain constructs and external variables can vary (Marikyan et al., 2023). Key predictive factors identified in TAM studies in education include self-efficacy, subjective norms, perceived enjoyment, facilitating conditions, and computer anxiety (Granić, 2019).

In this study, the focus is only examining acceptance of using Scratch using thhree constructs in TAM namely PU, PEU and ATU only. It is because the workshop was conducted to introduce Scratch as a tool for developing interactive multimedia projects. Therefore, the study cannot further investigate until BI and ASU.

METHODOLOGY

This study adopted a quantitative research design to evaluate the effectiveness of a USR programme that introduced Scratch for developing interactive multimedia. A pre-test and post-test survey design was employed to measure changes in participants' perceptions before and after the workshop. This approach allowed for a systematic comparison of students' responses, thereby providing empirical evidence of the programme's impact.

The participants of the study were seleceted through purposive sampling. They were undergraduate students majoring in English at Heilongjiang University of Finance and Economics who attended the Scratch workshop. A pre-test and post-test were administered before and after the workshop. The pre-test was distributed at the beginning of the programme to assess students' initial familiarity, interest, and confidence in using Scratch, while the post-test was administered at the end of the workshop to capture changes in these variables after the intervention.

The items in the pre-test and post-test were developed based on the objectives of the study and guided by the Technological Acceptance Model (TAM) proposed by Davis (1993). Specifically, the instruments aimed to: (a) evaluate the effectiveness of the programme in terms of students' familiarity, interest, and confidence in using Scratch before and after the programme; (b) examine students' acceptance of Scratch for developing interactive multimedia projects after the programme; and (c) assess the relationship between perceived ease of use (PEU), perceived usefulness (PU), and attitude towards use with students' motivation and preference for using Scratch.

To facilitate ease of access, the pre-test and post-test were distributed using QR codes, and the survey items were made available in two languages, namely English and Simplified Chinese. Microsoft Forms was used as the data

collection platform as they are available for use in China. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive and inferential statistics were employed to address the research objectives, and the findings are presented in the form of tables and charts.

RESULTS AND DISCUSSION

Reliability Statistics

A reliability analysis was conducted to determine the internal consistency of the 20-item scale. Table 1 indicates that a Cronbach's alpha of .849 (N=20), suggesting high reliability and internal consistency (Field, 2018).

Table 1 Realibility statistics

Cronbach's Alpha	N of Items
.928	20

Demographic profile of the sample

The sample consisted of 44 students who attended the programme. However, only 37 completed the tests to be used for the analysis. Table 2 indicates that 86.5 percent of the students were female, and 13.5 percent of them were male.

Table 2 Gender

Gender	N	Percentage (%)
Male	5	13.5
Female	32	86.5

To evaluate the effectiveness of the programme in terms of familiarity, interest, and confidence in using Scratch before and after the programme.

Three items were provided in the test, asked before and after the programme. Table 2 indicates the mean scores, standard deviations, and the interpretation of the mean scores of the items. The items apply five Likert scales on agreement, which were strongly disagree (1), disagree (2), Neutral (3), agree (4), and strongly agree (5). The interpretation of mean scores is based on Alston and Miller (2002): Strongly Disagree (1.0 - 1.49), Disagree (1.5 - 2.49), Neutral (2.5 - 3.49), Agree (3.5 - 4.49) and Strongly Agree (4.5 – 5.0)

Table 3 demonstrates that there was an increase in familiarity, interest, and confidence in using Scratch among the students after the implementation of the programme. Before the programme, the mean scores for the statements "I know how to sign up for Scratch," "I am interested in using Scratch," and "I am confident to use Scratch" were 2.35, 3.84, and 3.65, respectively, suggesting limited knowledge but moderate interest and confidence. After the programme, the means increased to 4.08, 4.24, and 4.16, indicating substantial improvement in familiarity, interest, and confidence in using Scratch among the students. The overall mean value increased from 3.28 (neutral) to 4.16 (agree), reflecting the program's effectiveness in enhancing participants' engagement and self-efficacy with Scratch.

Table 3 Familiarity, interest, and confidence in using Scratch before and after the programme

	Before the programme		After the programme	
	Mean	Std. Deviation	Mean	Std. Deviation
I know how to sign up for Scratch	2.35 (Disagree)	1.27	4.08 (Agree)	1.19
I am interested in using Scratch	3.84 (Agree)	1.04	4.24 (Agree)	.93
I am confident in using Scratch	3.65 (Agree)	1.16	4.16 (Agree)	.96
Average	**3.28 (Neutral)**		**4.16 (Agree)**	

The results suggest that the workshop can promote the use of Scratch among the students. Students can gain knowledge about Scratch through the USR workshop. The workshop can also increase their interest and confidence in adopting technology in ICT. Research has proven that USR programmes have significant contribution to sustainability and improve university performance worldwide (Alsrehan, 2025).

To examine the acceptance of using Scratch for developing interactive multimedia projects after the programme, using the Technological Acceptance Model

Table 5 presents the results for the acceptance of using Scratch for developing interactive multimedia projects after the programme. The Technological Acceptance Model by Davis (1993) was used to measure the acceptance of Scratch, as Scratch is a digital application.

The items also include five Likert scales on agreement, which were strongly disagree (1), disagree (2), Neutral (3), agree (4) and strongly agree (5). Thus, the interpretation of mean scores is also based on Alston and Miller (2002).

For PEU, the students agreed that learning to use Scratch was easy (M=3.84, SD=.90), it was easy to use Scratch (M=4.03, SD= .90), it would be easy for them to become skilful in using Scratch (M=3.51, SD=1.17), and Scratch was friendly to users (M=4.35, SD=.92).

After the programme, they perceived Scratch as a user-friendly tool that they could use it easily.

For PU, the students agreed that using Scratch was useful for developing interactive multimedia projects (M=4.32, SD.88), not time-consuming (M=4.16, SD=.93), not costly (M= 4.16, SD=1.04), and offering them many resources to help them use it effectively (M=4.22, SD=1.05). The results suggest that the programme enhanced the students' recognition of Scratch as a valuable and applicable tool in their learning context.

For ATU, the students agreed that they wanted to use Scratch to develop games (M=4.08, SD=.95), interactive stories (M=4.14, SD=.89) and animations (M=4.11, SD=.88).

Moreover, they also wanted to recommend to their friends to use Scratch (M=4.22, SD=.95). The results suggest that they had positive attitudes toward using Scratch after the programme.

Table 5 Perceived Ease Use, Peceived Usefulness and Attitudes towards use in using Scratch

Item		Mean	Interpretation of Means	Standard Deviation
PEU1	Learning to use Scratch is easy for me.	3.84	Agree	.90
PEU2	It is easy to use Scratch.	4.03	Agree	.90
PEU3	It would be easy for me to become skilful in using Scratch.	3.51	Agree	1.17
PEU4	Scratch is friendly to users.	4.35	Agree	.92
Average		**3.93**		Agree
PU1	Scratch is useful for developing interactive multimedia projects.	4.32	Agree	.88
PU2	Using Scratch for developing multimedia projects is not time-consuming	4.16	Agree	.93
PU3	Using Scratch for developing multimedia projects is not costly	4.16	Agree	1.04
PU4	Scratch offers many resources to help me using it effectively	4.22	Agree	1.06

Average		**4.22**		Agree
ATU1	I want to use Scratch to develop games.	4.08	Agree	.95
ATU2	I want to use Scratch to develop interactive stories.	4.14	Agree	.89
ATU3	I want to use Scratch to develop animations.	4.11	Agree	.88
ATU4	I want to recommend that my friends use Scratch.	4.22	Agree	.95
Average		**4.14**	**Agree**	Agree

Overall, it is evident that Scratch is easy to use and useful for the students. Previous studies indicate that Scratch is effective to develop computational thinking among students in higher education (Agbo et al., 2019; Roméro et al., 2017) and useful in enhancing digital skills and critical thinking skills (Roméro et al., 2017). Besides, students may use Scratch as they had positive attitudes towars using the application. This may be due to the application is easy to use and useful.

To assess the relationship between perceived ease of use (PEU), perceived usefulness (PU), and attitude towards use after the programme, with motivation and preference in using Scratch.

The Spearman Correlation Test was conducted for non-parametric data since the data were collected using purposive sampling. The results of the correlations between the variables, namely PEU, PU, ATU, motivation to use Scratch, and preference for using Scratch are presented in Table 6.

The cut-off values to interpret the correlation results are based on Cohen (1988) as follows: small correlation: r=0.10 to 0.29, medium correlation: r=0.30 to .49 and high correlation: r=0.50 and above.

The results indicate that there are significant correlations at p<0.001 between motivation and preference to use Scratch after the programme with the three variables. For motivation to use Scratch, the correlations were: PEU (r=.663), PU (r=.833) and ATU (r=0.870).

For preference to use Scratch, the correlations were: PEU (r=.742), PU (r=.762), and ATU (r=0.813). The results suggest that the programme effectively fostered the students' motivation to engage with Scratch and reinforced their decision to adopt it as a preferred digital tool in learning.

Table 6 Spearman Correlation Test results

			Motivation	Preference
	PEU	Correlation Coefficient	.663**	.742**
		Sig. (2-tailed)	<.001	<.001
		N	37	37
	PU	Correlation Coefficient	.833**	.762**
		Sig. (2-tailed)	<.001	<.001
		N	37	37
	ATU	Correlation Coefficient	.870**	.813**
		Sig. (2-tailed)	<.001	<.001
		N	37	37

The following is the figure to show the relationships between TAM constructs with motivation and preference to use Scratch

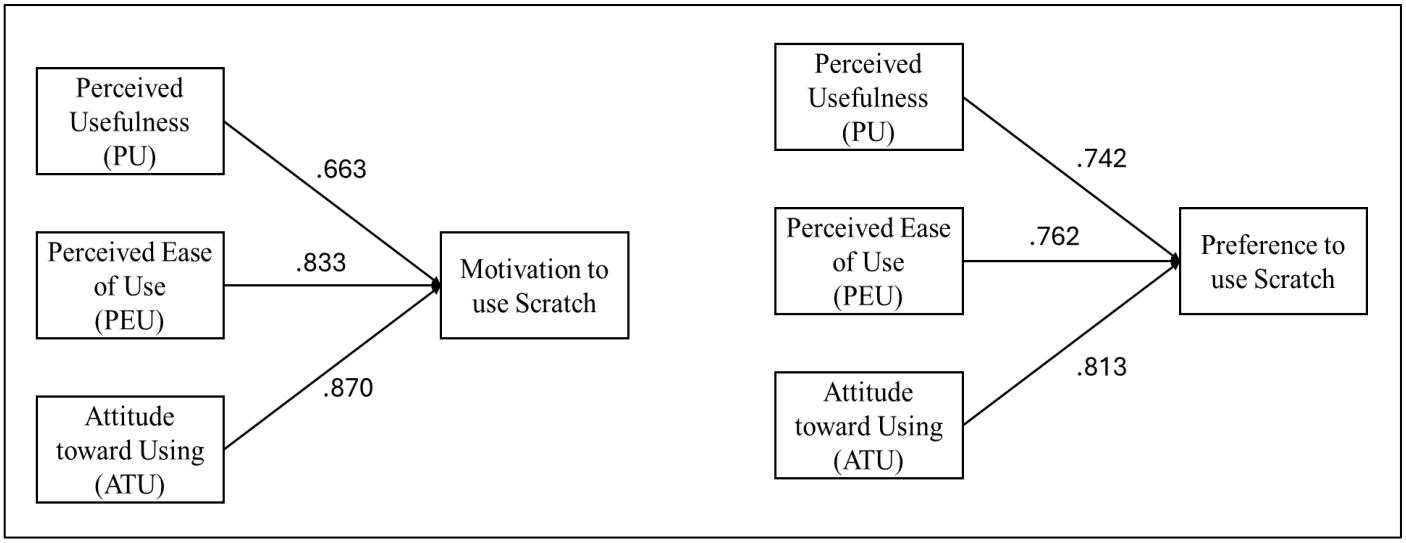

Figure 2 Relationships between TAM constructs with motivation and preference to use Scratch

The findings suggest that Scratch can be adopted in higher education for developing interactive multimedia projects as all the constructs in TAM have high correlations with motivation and preference in using Scratch. Scratch was perceived easy to use and useful. Since PEU and PU shape attitudes and behavioral intentions (Davis et al., 1989), students may be motivated and prefer to use it.

CONCLUSION

This workshop, held under the USR programme, successfully met its objectives and contributed to an invaluable and meaningful exchange of knowledge between the two universities.The workshop effectively introduced Scratch as a tool for developing interactive multimedia projects and was received positively by the participants. The evaluations conducted before and after the programme indicated that there were improvements in students' ability to use Scratch, with increased interest and confidence among the students.Furthermore, the students demonstrated willingness to use Scratch for creating digital content such as games, stories, and animations, and showed positive attitudes in recommending it to others. They also expressed strong motivation to continue using Scratch, indicating the programme's effectiveness in fostering engagement and enthusiasm.Hence, the USR workshop not only built digital competencies but also promoted intercultural academic relations. The outcomes suggest that initiatives like this can significantly enhance students' technological readiness and openness to creative learning tools like Scratch.

Although the present study provides useful insights, its conclusions are limited by the relatively small sample size. To strengthen the validity and reliability of future research, it is important to use larger and more diverse participant groups that better reflect the characteristics of wider populations. Thus, it can enhance the generalizability of the findings and allow researchers to draw more robust conclusions that extend beyond the immediate study context. In addition, subsequent investigations may adopt longitudinal designs to examine whether workshop-based interventions in digital literacy and technology acceptance lead to sustained improvements over time. Such designs will not only capture immediate outcomes but also reveal long-term patterns of change, persistence, or decline in participants' skills and attitudes. By expanding sample diversity and incorporating longitudinal approaches, future studies can provide a more comprehensive understanding of how educational interventions influence digital literacy development and technology adoption across different settings and populations.

REFERENCES

1. Agbo, F. J., Oyelere, S. S., Suhonen, J., & Adewumi, S. (2019, November). A systematic review of computational thinking approach for programming education in higher education institutions. In Proceedings of the 19th Koli calling international conference on computing education research (pp. 1-10).

2. Ahmad, J., & Awang, D. N. (2025, July). University Social Responsibility in Malaysian Higher Education: A Qualitative Study of Implementation. In Competitiveness and Sustainability in the Digitization Era: Proceedings of the 16th International Conference on Competitiveness and Stability in the Knowledge Base Society (iCOnEc), Romania, October 25—26, 2024 (p. 185). Springer Nature.
3. Alsrehan, H. (2025). The Social Responsibility of Universities and Its Impact on Sustainable Development Towards a Future Vision. Sustainable Development.
4. Alston, A. J., & Miller, W. W. (2002). Analyzing the barriers and benefits toward instructional technology infusion in North Carolina and Virginia secondary agricultural education curricula. Journal of Agricultural Education. 43(1): 1, 43(1–12). https://eric.ed.gov/?id=ED459996
5. Basheer, N., Ahmed, V., Bahroun, Z., & Anane, C. (2025). Sustainability assessment in higher education institutions: exploring indicators, stakeholder perceptions, and implementation challenges. Discover Sustainability, 6(1), 1-25.
6. Castro, A. J., Zanello, L., Lizcano, J., & Daza, A. (2022). USR as a tool for meeting the SDGs: a systematic review. IEEE Revista Iberoamericana de Tecnologias del Aprendizaje, 17(1), 48-55.
7. Chaker, R. (2020). Digital skills are predictors of professional social capital through workplace and social recognition. Italian Journal of Sociology of Education.
8. Choudhary, H., & Bansal, N. (2022). Addressing digital divide through digital literacy training programs: A systematic literature review. Digital Education Review, (41), 224-248.
9. Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Routledge.
10. Davis, D. F. (1993). User acceptance of information systems : the technology acceptance model (TAM). International Journal of Man-Machine Studies, 38, 475–487.
11. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008
12. Davis, F. D., Bagozzi, R. P., Warshaw, P. R. (1889). User Acceptance of Computer Technology: a Comparison of Two Theoretical Models. Management Science, 35(8), 982-1003. https://home.business.utah.edu/actme/7410/DavisBagozzi.pdf
13. Falcinelli, F., & Moscetti, C. (2021). Teaching digital skills to future teachers: a distance workshop experience. Research on Education and Media, 13(2), 11-17.
14. Field, A. (2018). Discovering statistics using IBM SPSS statistics (5th ed.). SAGE Publications.
15. Granić, A. (2025). Emerging Drivers of Adoption of Generative AI Technology in Education: A Review. Applied Sciences, 15(13), 6968.
16. Granić, A., & Marangunić, N. (2019). Technology acceptance model in educational context: A systematic literature review. British Journal of Educational Technology, 50(5), 2572-2593.
17. Hamdan, A. A. D. Singh, J. Kovilpillai, I. F. Kamsin, C. Suriyarangsun, W. Brahmawong, P. Phanphai, and S. Aggarwal. 2024. "Empowering Neet Girls Through Digital Skills: The Digitally Intelligent Girls (Di-Girls) Initiative's Potential, Pitfalls and Prospects." International Journal of Academic Research in Progressive Education and Development, 13(1). https://doi.org/10.6007/ijarped/v13-i1/19396
18. Hsiao, C. H., & Tang, K. Y. (2025). Beyond acceptance: an empirical investigation of technological, ethical, social, and individual determinants of GenAI-supported learning in higher education. Education and Information Technologies, 30(8), 10725-10750.
19. Jones, E., Leask, B., Brandenburg, U., & De Wit, H. (2021). Global social responsibility and the internationalisation of higher education for society. Journal of Studies in International Education, 25(4), 330-347.
20. Latif, K. F. (2018). The development and validation of stakeholder-based scale for measuring university social responsibility (USR). Social indicators research, 140(2), 511-547.
21. Marikyan, D., Papagiannidis, S., & Stewart, G. (2023). Technology acceptance research: Meta-analysis. Journal of Information Science, 01655515231191177.
22. Moghadam, M. R. S., Govindan, K., Dahooie, J. H., Mahvelati, S., & Meidute-Kavaliauskiene, I. (2021). Designing a model to estimate the level of university social responsibility based on rough sets. Journal of Cleaner Production, 324, 129178.
23. Menon, D., Sowmya, B. P., Romero, M., & Viéville, T. (2020). Going beyond digital literacy to develop computational thinking in K-12 education. In Epistemological Approaches to Digital Learning in Educational Contexts (pp. 17-34). Routledge.

24. Montiel, H., & Gomez-Zermeño, M. G. (2021). Educational challenges for computational thinking in k–12 education: A systematic literature review of "scratch" as an innovative programming tool. Computers, 10(6), 69.
25. Roméro, M., Lepage, A., & Lille, B. (2017). Computational thinking development through creative programming in higher education. International Journal of Educational Technology in Higher Education, 14(1), 42.
26. Saaida, M. (2023). Global catalysts: Empowering universities for social change in developing countries. Edukasiana: Jurnal Inovasi Pendidikan, 2(4), 318-341.
27. Teo, T., & Noyes, J. M. (2010). Explaining the intention to use technology among educational users: A multi-group analysis of the Unified Theory of Acceptance and Use of Technology (UTAUT). Interactive Learning Environments, 37(4), 379-389.
28. Wang, C. (2025). Exploring China-Malaysia Educational Cooperation within the Context of BRI. Environment-Behaviour Proceedings Journal, 10(34), 85-90.
29. Zhai, X., Razali, A. B., Luo, S., Zhang, S., & Mai, H. (2023). Perceptions from Scholars in Education on Sino-Malaysian Higher Education Cooperation Under the Background of One Belt and One Road Initiative: A Case Study.