



ASSESSMENT OF ADVANCEMENT OF AFFECTIVE AND PSYCHOMOTOR TOOLS AMONG UNDERGRADUATES IN FACULTIES OF EDUCATION, UNIVERSITY OF CALABAR

Uchegbue, Henrietta Osayi; Ari-Tano, Agbor Judith Tawo-Oben; Otu, Bernard Diwa; & Anele, Ezebunwo

huchegbue@yahoo.com, Bernardotu@unical.edu.ng, Otu_bernard@yahoo.com & aneleezebunwo2022@gmail.com

Department of Educational Foundations, University of Calabar, Nigeria

ABSTRACT

This study aimed to assess the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar, Nigeria. Two research questions were generated to direct the study and achieve its purpose. Survey research design was adopted for the study. A sample of two hundred (200) students was randomly selected for the study. The selection was done through the stratified random sampling technique. Assessment of Advancement of Affective and Psychomotor Tools (AAPT) was the main instrument used for data collection. The questionnaire was face-validated by professionals in measurement and evaluation. From the expert's observation and comments, some items were dropped, some modified and some new ones were added. The reliability index of the instruments was established through the Cronbach Alpha reliability method. The reliability coefficient ranges from 0.83 to 0.91. Descriptive statistics of mean and standard deviation was the statistical analysis technique adopted to answer the research questions. The analysis results revealed that technology-supported skills for advancing affective and psychomotor tools among undergraduates in faculties of education at the University of Calabar, Nigeria, are significantly positive. This study underscores the need to integrate technology-supported skills into curricula to prepare learners for holistic development.

Key words: Assessment, Technology supported skills, Advancement, Affective and Psychomotor tools

Introduction

The advancement of affective and psychomotor tools among undergraduates is crucial for holistic education, particularly in faculties of education where students are prepared for roles as educators and facilitators of learning. Affective tools foster emotional intelligence, empathy, and interpersonal skills, which are essential for managing classroom dynamics and nurturing learners. Similarly, psychomotor tools enable the practical application of theoretical knowledge, ensuring undergraduates acquire the hands-on skills necessary for effective teaching practices. In a rapidly evolving educational landscape, the development of these tools ensures that undergraduates are adequately equipped to meet contemporary educational challenges.

Despite the recognised importance of these tools, many undergraduates in faculties of education at the University of Calabar face significant challenges in advancing their affective and psychomotor capacities. Reports suggest a persistent lack of structured programs, inadequate resources, and limited exposure to innovative methodologies that could enhance these skills. As a result, many undergraduates graduate with subpar interpersonal and practical teaching competencies, affecting their performance in the classroom and broader educational contexts.

The ideal undergraduate is expected to demonstrate mastery in affective and psychomotor domains. Affective competencies include emotional regulation, empathy, effective communication, and conflict resolution. Psychomotor competencies, on the other hand, encompass hands-on teaching techniques, classroom management, and practical implementation of curriculum-based activities. Achieving these competencies requires intentional and structured interventions during undergraduate academic training.

While multiple factors influence the development of affective and psychomotor tools, this study highlights the potential of technology-supported skills as a critical determinant. In a digitally driven age, technology has revolutionised educational practices, offering innovative ways to bridge the gaps in skill acquisition. However, in the faculties of education at the University of Calabar, the application of technology-supported skills remains underexplored, leaving a critical gap in fostering these essential competencies.

Technology-supported skills refer to using digital tools and platforms to enhance learning, communication, and practical application of knowledge. According to Mishra and Koehler (2006), such skills encompass integrating technology into pedagogy effectively and utilising digital platforms to create engaging and interactive learning experiences. These skills include proficiency in using educational software, online collaboration tools, and virtual simulations. When applied to affective and psychomotor development, technology may provide platforms for virtual role-playing to enhance empathy, online collaborative tools to foster teamwork, and simulations to develop fine motor skills required for classroom activities.

The integration of technology-supported skills may promise to enhance affective and psychomotor tools. For instance, virtual reality (VR) simulations may immerse students in realistic classroom scenarios, enabling them to practice classroom management and empathetic engagement with learners. Similarly, educational software may help students refine their motor coordination through interactive exercises. Studies by Lee and Tsai (2018) have highlighted that incorporating such tools significantly improves student engagement and skill retention.

Despite the growing evidence supporting the benefits of technology-supported skills, government and stakeholders' efforts to integrate these innovations in higher education institutions have yielded minimal results. The University of Calabar, like many public universities in Nigeria, continues to rely on traditional teaching methods that inadequately address the development of affective and psychomotor competencies.

This study, titled "Assessment of technology-supported skills for the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar," seeks to explore how the integration of technology can address these gaps against this backdrop.

In an ideal educational setting, undergraduates, particularly in faculties of education, are expected to develop both affective and psychomotor competencies. Affective tools enable students to manage emotions, empathise with others, and

cultivate strong interpersonal relationships, essential for navigating complex social and professional environments. Psychomotor tools empower students with hands-on skills, allowing them to translate theoretical knowledge into practical applications effectively. This holistic advancement ensures that graduates are prepared to meet the demands of modern education, contributing to personal growth and societal development.

However, at the University of Calabar, the advancement of affective and psychomotor tools among undergraduates has been markedly inadequate. Many students struggle with emotional regulation, lack essential interpersonal skills, and fail to excel in practical tasks required for their professional roles. Consequently, students graduate ill-equipped to effectively meet the demands of teaching and other professional responsibilities.

The consequences of this poor advancement are far-reaching. Students with underdeveloped affective and psychomotor tools are less likely to adapt to real-world challenges, leading to decreased employability and diminished capacity to contribute meaningfully to societal development. Within the educational sector, this deficit translates into ineffective teaching practices, limited learner engagement, and a failure to achieve educational goals. The broader implications for education include a decline in quality and a growing mismatch between graduates' skills and labor market demands.

This situation is unacceptable, as education is widely recognised as an instrument for personal and national development. According to the National Policy on Education (2013), one of the primary objectives of education is to foster self-reliance, problem-solving abilities, and innovation among students. The persistent neglect of affective and psychomotor domains undermines these objectives, creating a gap between policy goals and educational outcomes.

Government and stakeholder efforts to address these challenges, such as curriculum reforms and teacher training programs, have yielded little success. Issues such as inadequate funding, lack of infrastructure, and insufficient awareness of the importance of affective and psychomotor development continue to hinder progress. Despite implementing educational policies and interventions, the lack of focus on technology-supported skills has largely unaddressed these critical areas of student development.

The affective domain involves emotions, attitudes, and values. Technology supports the development of these aspects through platforms that foster collaboration, empathy, and cultural awareness. According to Selwyn (2020), virtual reality (VR) and digital storytelling allow students to explore diverse perspectives, enhancing their emotional intelligence and communication skills. The psychomotor domain pertains to physical activities and movement coordination with cognitive processes. Simulation, robotics, and augmented reality (AR) help students develop fine motor skills and spatial awareness. For example, VR systems in medical training simulate surgical procedures, allowing students to practice without physical consequences (Kirkpatrick & Kirkpatrick, 2019).

While technology-supported skills offer immense benefits, challenges like access to resources, digital literacy gaps, and resistance to change persist. Anderson and Dron (2017) emphasise the importance of professional development for educators to effectively incorporate technology in lesson delivery. The interplay between technology-supported skills and the affective and psychomotor domains is evident in various studies. For example, Rajendran and Roy (2019) found that students using collaborative platforms like Google Workspace demonstrated enhanced teamwork

(affective domain) and better coordination during project-based tasks (psychomotor domain). These findings underscore the need to integrate technology-supported skills into curricula to prepare learners for holistic development.

In a study conducted by Iwuchukwu (2018) on virtual reality training and psychomotor skill development among medical students in Lagos, Nigeria. A quasi-experimental design was adopted. The population included 500 medical students, with a sample of 120 students selected using stratified random sampling. Data were collected using a validated VR Simulation Feedback Questionnaire with a reliability coefficient of 0.82. Observational checklists assessed participants' motor coordination during virtual surgical tasks. Paired t-tests and Analysis of Variance (ANOVA) were applied to analyse data. The result shows that students exposed to VR training demonstrated a 30% improvement in motor coordination and accuracy compared to traditional methods. The findings highlighted the effectiveness of immersive technology in enhancing psychomotor skills essential for medical practice.

Another study was conducted by Ekanem (2019) on collaborative digital tools and emotional intelligence: Evidence from high school students in Calabar. The researchers employed a mixed-methods design. A sample of 150 students was selected through purposive sampling from 1,200 students. Data were collected using the Collaborative Digital Tool Impact Scale (CDTIS) and semi-structured interviews. The CDTIS demonstrated a reliability score of 0.89. Descriptive statistics and thematic analysis were employed for data analysis. Quantitative results revealed a significant improvement in students' ability to empathise and work collaboratively. Qualitative data indicated that collaborative platforms like Google Workspace fostered a sense of belonging and accountability, critical components of the affective domain. The findings support integrating digital tools into secondary school curricula to promote cognitive and emotional development.

Finally, Nnaji (2020) studied augmented reality and fine motor skills acquisition in engineering education from a Nigerian perspective. A pretest-posttest control group design was adopted. The population consisted of 300 engineering students, with 100 participants selected using simple random sampling. Data were collected using a Motor Skill Assessment Rubric (MSAR) and an AR Engagement Scale, with reliability coefficients above 0.85. Independent t-tests and regression analysis were used to test the hypotheses. Results show that students in the experimental group, who used AR applications for mechanical assembly tasks, showed significantly improved precision and hand-eye coordination compared to the control group. Regression analysis indicated that 75% of fine motor skill development variation could be attributed to AR usage. The study concludes that AR is a valuable tool for developing psychomotor skills, particularly in technical fields requiring high levels of precision.

Combating this issue is imperative, as the advancement of affective and psychomotor tools is vital for producing well-rounded graduates capable of meeting societal and professional demands. This study, therefore, seeks to assess the role of technology-supported skills in addressing these deficits, with the ultimate goal of enhancing the holistic development of undergraduates in the faculties of education at the University of Calabar.

The study made use of the TPACK model. (Technological pedagogical Content Knowledge). The model was developed by Punya Mishra and Mathew J. Koehler in 2006. The TPACK model explains the effective integration of technology into teaching by appropriating the three types of knowledge; -technological knowledge (TK), explaining the use of digital tools and technology,

- Pedagogical knowledge (PK) explaining the use of instructional strategies,
 - Content Knowledge (CK) dealing with expertise in teaching the subject.
- There are further interactions of the three elements mentioned to form additional intersections.
- (TCK) explains how technology supports teaching strategies.
 - (TCK) explains how technology transforms subject content, finally,
 - (PCK) explains how teaching methods adapt to subject matter.

Research Questions

1. How does a mobile learning application skill support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar?
2. How do multimedia integration skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar?

Research methodology

The research design adopted for this study was survey research design. Survey research involves collecting data to accurately and objectively describe existing phenomena. Studies that use this approach are employed to obtain a picture of the present conditions of particular phenomena. Survey research is, therefore, beneficial for opinion and attitude studies. It depends basically on questionnaires and interviews as means of data collection. The survey research design is economical because a study of representing samples will permit inferences from generalisation to populations that could be too expensive to study.

The study area is the University of Calabar, situated in Calabar Metropolis. Calabar Metropolis is between latitude 4⁰28" and 6⁰31 north and longitude 7⁰50" and 9⁰28" east of the Greenwich meridian. It covers an area of 18,074; 4.35km. The study population comprised all the 4,000 undergraduates in Faculties of Education, University of Calabar in Cross River State, Nigeria. The stratified random sampling technique was used for the study. The stratification was based on the four Faculties of Education. In each of the faculties, the simple random sampling technique was used to select the sample for the study. *This gave every member of the population an equal and independent opportunity to be chosen.* 5% of the students in each Faculty was used for the study because the researchers felt it was adequate to generalise the findings. The sample consists of 200, which comprised 5% of the population.

Technology Supported Skills for the Advancement of Affective and Psychomotor Tools (TSSAAPT) was the main instrument used for data collection. The instrument consists of two sections. Section A elicits information on respondents' data, such as sex and age. Section B consists of the 18 items that measure digital skills. Section C consists of 10 items that measure research skills acquisition. The questionnaire is a 4-point modified Likert scale type, ranging from Strongly Agree (SA, 4 points), Agree (A, 3 points), Disagree D, 2 points) and Strongly Disagree (SD, 1 point) and the reverse for negatively worded items.

Professionals in measurement and evaluation validated the questionnaire. The reliability index of the instruments was established through the Cronbach Alpha reliability method. The reliability coefficient ranges from 0.83 to 0.91. The questionnaires were administered personally by the researchers with the help of two research assistants. Descriptive statistics of mean and standard deviation were the statistical analysis techniques adopted to answer the research questions under study.

Results

This section deals with the answering of the research questions

Research Question one

How do mobile learning application skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar? To answer this research question, responses to items 1-5 of section B on the questionnaire were analysed. The result of the analysis is presented in Table 1.

TABLE 1

Response of the respondents on how mobile learning applications skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar (N=200)

Mobile Learning Applications		Mean	SD	Remark
1.	I use mobile learning applications for academic purposes	2.85	.87	Significant
2.	I find mobile learning applications easy to navigate	2.97	.80	Significant
3.	Mobile learning applications enhance my understanding of course content	3.00	.97	Significant
4.	Mobile learning applications compatible with the devices my own	2.93	.93	Significant
5.	I believe mobile learning applications improve my academic performance	2.94	.923	Significant
Mean of the means		2.99	0.76	

Source: Field survey 2024

Table 1 presents the mean ratings of how mobile learning application skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar. All the isolated items recorded mean ratings ranging from 2.59 to 3.00, which were above the cut-off mark of 2.50, thus indicating that the extent to which mobile learning applications skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar are adequate. The standard deviation ranged from 0.76 to 0.97, which revealed that respondents were not too far from the mean and each other in their responses.

Research Question Two

How does a multimedia integration skill support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar? Responses to items 6-10 of section B on the questionnaire were analysed to answer this research question. The result of the analysis is presented in Table 2

TABLE 2

Response of the respondents on how multimedia integration skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar (N=200)

Multimedia Integration		Mean	SD	Remark
11	My teachers use multimedia tools in their lessons	3.62	.78	Significant
12	Multimedia integration make lessons more engaging for me	3.19	.77	Significant

13	I think multimedia tools help me understand difficult concepts better	3.17	.95	Significant
14	Multimedia resources are readily available in our learning environment	3.23	.96	Significant
15	I prefer multimedia-based instruction over traditional teaching methods	2.63	.83	Significant
Mean of the means		3.09	0.83	

Source: Field survey 2024

Table 2 presents the mean ratings of how multimedia integration skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar. All the isolated items recorded mean ratings ranging from 2.63 to 3.61, which were above the cut-off mark of 2.50, thus indicating that the extent to which multimedia integration skills support the advancement of affective and psychomotor tools among undergraduates in Faculties of Education, University of Calabar is high. The standard deviation ranged from 0.78 to 0.96, which revealed that respondents were not too far from the mean and each other in their responses.

Hypothesis one

There is no significant influence of gender on secondary school technology-supported skills for advancing affective and psychomotor tools. The independent variable in this hypothesis is gender, which is categorised into two (male and female), while the dependent variable is technology-supported skills for the advancement of affective and psychomotor tools in terms of mobile learning applications skills and multimedia integration skills. To test this hypothesis, each of the two gender categories was compared with the two dimensions of technology-supported skills for the advancement of affective and psychomotor tools in terms of mobile learning application skills and multimedia integration skills using independent t-test analysis. The result is presented in Table 3

TABLE 3

Independent t-test analysis of the influence of gender on technology-supported skills for the advancement of affective and psychomotor tools (N=200)

Technology supported skills	Gender	N	\bar{X}	SD	t-value	p-value
Mobile learning application skills	Male	90	17.42	1.75	-6.26*	.000
	Female	110	18.08	1.64		
Multimedia integration skills	Male	90	15.12	2.83	-3.68*	.000
	Female	110	15.73	2.46		

*Significant at .05 level, p-value = .00, df = 198

The analysis result in Table 3 reveals that the calculated t-value for mobile learning application skills (-6.26) and multimedia integration skills (-3.68) are respectively higher than the p-value of .000 at .05 significance level with 198 degrees of freedom. With this result, the null hypothesis is rejected regarding mobile learning application skills and multimedia integration skills. This implies that gender significantly influences technology-supported skills for advancing affective and psychomotor tools in terms of the two sub-categories.

Discussion of findings

The analysis results revealed that technology-supported skills for advancing affective and psychomotor tools among undergraduates in faculties of education at the University of Calabar, Nigeria, are significantly positive. The findings align with the view of Anderson and Dron (2017), who emphasised the importance of professional development for educators to effectively incorporate technology in lesson delivery. The interplay between technology-supported skills and the affective and psychomotor domains is evident in various studies. Rajendran and Roy (2019) also found that students using collaborative platforms like Google Workspace demonstrated enhanced teamwork (affective domain) and better coordination during project-based tasks (psychomotor domain). These findings underscore the need to integrate technology-supported skills into curricula to prepare learners for holistic development.

These findings are consistent with existing literature emphasising the critical role of multimedia tools in fostering holistic student development. By engaging multiple senses and providing diverse interactive opportunities, multimedia enhances emotional connections to content (affective domain) and improves hands-on learning and practical skills (psychomotor domain). Overall, the results emphasise equipping educators and students with multimedia integration skills to maximise the potential of technology-enhanced learning environments. Further studies could explore specific types of multimedia tools or teaching strategies that yield the most significant impact on these domains to refine educational practices.

The findings align with existing literature highlighting multimedia tools' critical role in fostering holistic student development. Researchers like Mayer (2019) and Moreno (2020) have shown that multimedia enhances learning by engaging multiple senses, which facilitates deeper emotional connections to the content (affective domain) and improves practical, hands-on skills (psychomotor domain). These tools offer diverse interactive opportunities, fostering active participation and skill acquisition. The consistency of responses among participants, as reflected in the low standard deviation values, further supports the reliability of the findings. This agreement reinforces the perception that multimedia integration skills significantly advance undergraduates' affective and psychomotor capabilities. Moreover, the results underscore the need to equip educators and students with robust multimedia integration skills to harness the full potential of technology-enhanced learning environments. As Clark and Mayer (2016) have argued, the thoughtful application of multimedia principles can enhance learning outcomes across various domains. Future research could explore specific multimedia tools or teaching strategies with the most significant impact on affective and psychomotor outcomes to further inform and refine educational practices.

Conclusion and Recommendations

The study examined the impact of technology-supported skills on affective and psychomotor tools among undergraduates in the Faculties of Education, University of Calabar, Nigeria. The results show a significant positive relationship between technology-supported skills and the advancement of affective and psychomotor tools. Technology-supported skills are pivotal for advancing affective and psychomotor tools, providing innovative ways to enhance emotional intelligence and physical coordination. As education continues to embrace digital transformation, integrating these skills into teaching and learning frameworks becomes indispensable for comprehensive student development.

The findings have significant implications for educational policymakers. They highlight the need to prioritise technology integration in teacher education programs

to improve teacher quality and student learning outcomes. Policymakers should allocate resources to support the development of technology-supported skills among educators, ensuring they can effectively leverage technology to enhance teaching and learning.

The study's outcome also informs curriculum design. Educators should ensure that curricula balance cognitive, affective, and psychomotor learning objectives, utilising technology to support these objectives. This balanced approach can foster holistic student development, preparing graduates for career and personal success. By embracing technology-supported skills, educators can create engaging, effective learning environments that foster student success and prepare graduates for the challenges of the 21st century. The following recommendations were made:

1. Educational institutions should incorporate technology-supported skills, such as digital affective and psychomotor learning tools, into their curricula. This integration ensures that students have structured opportunities to develop emotional intelligence and physical coordination through innovative approaches.
2. Provide regular teacher training on using technology to support affective and psychomotor development. Workshops and certifications in digital teaching tools will empower educators to design engaging lessons and assessments that foster holistic student growth.
3. Governments and school administrators should invest in digital infrastructure, such as virtual labs, interactive simulations, and mobile learning applications, to facilitate psychomotor learning and emotional intelligence development in diverse educational settings.
4. Encourage the adoption of interactive and adaptive learning technologies that cater to individual student needs. Examples include augmented reality (AR) and virtual reality (VR) tools, which can create immersive environments for practicing psychomotor skills. The government should Utilize Affective tools like emotional intelligence apps (e.g., Happify), social skills training programs (e.g., Social Skills Trainer), and online counseling platforms (e.g., BetterHelp). Psychomotor Tools Leverage tools like educational games (e.g., Kahoot), virtual reality experiences (e.g., Google Expeditions), and online simulation platforms (e.g., PhET Interactive Simulations). Collaborative Learning Platforms: Use platforms like Google Classroom, Microsoft Teams, or Schoology to facilitate collaborative learning and technology-supported group work.
5. Partner with edtech companies to develop affordable and user-friendly tools tailored to advancing emotional and physical skills among students.
6. Regularly evaluate the effectiveness of technology-supported tools through research and feedback mechanisms. This will help refine approaches and ensure they meet educational objectives.

References

- Anderson, T., & Dron, J. (2017). *Teaching and learning in the digital age*. Routledge.
- Chai, C. S., Koh, J. H. L., & Tsai, C.-C. (2019). A review of technology-supported student-centered learning. *Educational Technology & Society*, 22(1), 25-35.
- Clark, R. C., & Mayer, R. E. (2016). *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. Wiley.

- Ekanem, R. E. (2019). Collaborative digital tools and emotional intelligence: Evidence from high school students in Calabar. *Nigerian Journal of Secondary Education*, 14(2), 101-118.
- Federal Republic of Nigeria. (2013). *National Policy on Education* (6th ed.). Lagos: NERDC Press.
- Iwuchukwu, J. M. (2018). Virtual reality training and psychomotor skill development among medical students in Lagos, Nigeria. *Journal of Educational Technology Research*, 12(3), 45-61.
- Kirkpatrick, J., & Kirkpatrick, W. (2019). *The new world of training evaluation*. ATD Press.
- Lee, S., & Tsai, C. (2018). Technology-supported skill development in education: Impact on affective and psychomotor domains. *Educational Technology Research and Development*, 66(4), 801-815.
- Mayer, R. E. (2019). *Multimedia Learning*. Cambridge University Press.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017-1054.
- Moreno, R. (2020). *Educational Psychology: A Multimedia Approach*. Wiley.
- National Policy on Education (2013). Federal Republic of Nigeria. Lagos: NERDC Press.
- Nnaji, B. C. (2020). Augmented reality and fine motor skills acquisition in engineering education: A Nigerian perspective. *International Journal of Educational Innovations*, 15(4), 67-82.
- Rajendran, R., & Roy, M. (2019). Enhancing psychomotor skills in education: The role of technology. *Journal of Educational Technology*, 15(4), 45-56.
- Selwyn, N. (2020). *Education and technology: Key issues and debates*. Bloomsbury.

