

# Effectiveness of University-Based Educational Interventions on Adaptive Functioning and Employment Readiness of Students with Mild Intellectual Disability

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**Abstract:** *Background:* Inclusive higher education is increasingly recognized as a pathway for enhancing functional independence and employment outcomes among students with mild intellectual disability. University-based educational interventions aim to support adaptive functioning (AF) and employment readiness (ER); however, empirical evidence regarding their effectiveness in Nigerian universities remains limited.

*Objective:* This study examined the perceived impact of university-based educational interventions on AF and ER among students with mild intellectual disability and explored whether these domains jointly predict overall intervention effectiveness.

*Methods:* A quantitative descriptive research design was employed. Structured questionnaires were administered to 92 students; 84 were completed and returned, yielding a response rate of 91.3%. Among respondents, 46 were male, and 38 were female; all were included in the analyses. Descriptive statistics summarized perceived outcomes of interventions, while multiple regression analysis examined the predictive relationship between AF, ER, and overall intervention effectiveness.

*Results:* The findings indicated that university-based interventions were associated with perceived improvements in communication, problem-solving, social interaction, self-care, task completion, and engagement with career support services. The independent *t*-test analyses showed no significant differences in overall AF by gender or ER by age, though minor item-level variations were observed. While AF and ER individually reflected positive outcomes, their combined effect did not significantly predict overall intervention effectiveness, suggesting that additional contextual and programmatic factors influence perceptions of success.

*Conclusion:* University-based educational interventions contribute meaningfully to the development of adaptive and employment-related skills among students with mild intellectual disability. The findings highlight the importance of a holistic approach that integrates academic instruction, vocational preparation, social support, and institutional resources to enhance overall program effectiveness. Overall, students perceive these interventions as beneficial in promoting independence, practical skills, and workforce preparedness.

**Keywords:** Adaptive functioning, employment readiness, intellectual disability, inclusive higher education, university-based interventions.

## INTRODUCTION

In recent decades, global educational and social reforms have increasingly emphasized the inclusion of individuals with intellectual disabilities (ID) in higher education. This shift reflects not only a growing recognition of education as a fundamental human right but also an understanding of higher education as a

pathway to social participation, economic productivity, and improved quality of life. Intellectual disability, characterized by significant limitations in intellectual functioning and adaptive behavior originating during the developmental period, affects approximately 1%-3% of the global population [1, 2]. Individuals with mild intellectual disability constitute the most significant proportion of this population and demonstrate considerable potential for functional improvement when provided with appropriate educational, social, and vocational supports [3].

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Despite policy commitments to inclusive education, students with intellectual disabilities remain underrepresented and inadequately supported within university systems, particularly in low- and middle-income countries [4]. In many contexts, access to higher education has expanded without parallel investments in structured support services that address functional independence and employment preparation. As a result, participation alone has not consistently translated into meaningful post-university outcomes for students with intellectual disabilities.

Adaptive functioning is central to both the diagnosis and long-term treatment of intellectual disability. It encompasses conceptual, social, and practical skills necessary for independent living, academic engagement, and employment [5]. Research consistently demonstrates that limitations in adaptive behavior are more predictive of adult outcomes than intellectual functioning alone [6]. From a clinical and rehabilitative perspective, interventions that enhance adaptive functioning and employment readiness are therefore essential indicators of adequate support for individuals with mild intellectual disability. Employment readiness—defined by work-related skills, social competence, self-regulation, and task independence—remains a persistent challenge and is strongly associated with community inclusion, autonomy, and quality of life [7, 8].

Universities are increasingly recognized as environments capable of delivering structured interventions that extend beyond academic instruction. Inclusive curricula, skills-based instruction, mentoring programmes, supported internships, and transition-focused learning opportunities position higher education institutions as functional and therapeutic settings that complement traditional clinical and rehabilitative services [9, 10]. For students with mild intellectual disability, these environments provide opportunities for supported independence, real-world learning, and social integration, all of which are critical for adaptive and vocational development.

The present study is theoretically grounded in the Adaptive Functioning Framework of Intellectual Disability, which conceptualizes functional competence—rather than intelligence alone—as the primary outcome of effective intervention. This framework aligns with contemporary diagnostic standards and treatment-oriented perspectives that emphasize skill acquisition, environmental support, and participation across life domains. In addition, the study

draws on social learning theory and ecological systems theory, which posit that functional skills develop through structured interactions within supportive educational and social environments. Universities, within this theoretical lens, function as complex ecological systems capable of shaping adaptive behavior and employment readiness through instructional practices, peer engagement, institutional supports, and experiential learning opportunities.

Despite growing recognition of the role of higher education in supporting students with intellectual disabilities, empirical evidence on the effectiveness of university-based educational interventions remains limited. Existing research has focused mainly on primary and secondary education, community-based vocational programmes, or sheltered employment settings [11, 12]. Only a small body of literature has examined universities as treatment-oriented environments capable of producing measurable gains in adaptive functioning and employment readiness among young adults with intellectual disability [13]. This evidence gap is particularly pronounced in Sub-Saharan Africa, where higher education institutions often operate with limited funding, inadequate specialized services, and weak integration between educational and rehabilitation systems [14].

In developing countries such as Nigeria, universities increasingly admit students with intellectual disabilities without corresponding investments in adaptive skills training or employment-focused educational programmes. Consequently, many students complete university education without achieving meaningful gains in functional independence or work readiness [15]. Studies from Kenya and Ghana similarly indicate that while inclusive access to higher education is expanding, outcome-oriented interventions targeting adaptive functioning and vocational competence remain underdeveloped [16, 17]. These trends raise concerns about the effectiveness of university-based education as a pathway to adult independence for students with intellectual disabilities.

International frameworks, including the United Nations Convention on the Rights of Persons with Disabilities and Sustainable Development Goal 4, advocate inclusive and equitable quality education for all learners [18, 19]. However, empirical research linking university-based educational interventions to functional and employment outcomes for students with mild intellectual disability remains sparse. Much of the existing literature emphasizes access and participation

rather than treatment-related outcomes such as adaptive behavior, employment readiness, and independent functioning [20].

Empirical studies conducted primarily in high-income countries provide evidence that structured university-based interventions can enhance adaptive functioning. Smith and Jones [21] reported significant improvements in independent living and social interaction skills among post-secondary students in the United States, while Brown *et al.* [22] found that individualized support plans improved daily living skills and self-care among university students in the United Kingdom. Longitudinal findings by Wehman *et al.* [23] demonstrated consistent gains in communication, problem-solving, and independent task completion through participation in college transition programmes. Similar improvements in socialization, decision-making, and functional independence have been documented across Canadian and European contexts [24 - 27].

Employment-related outcomes have also been examined, with evidence suggesting that university-based career-oriented interventions improve vocational skills and employment readiness. Studies have shown that participation in post-secondary transition programmes enhances work habits, task completion, teamwork, and workplace communication [28 - 30]. Supported employment models, experiential learning opportunities, and structured career planning integrated into university curricula have been associated with improved job confidence, employability skills, and job-matching outcomes [31 - 34].

Collectively, these findings highlight the potential of structured educational and vocational interventions within higher education to enhance adaptive functioning and employment readiness among students with mild intellectual disability. However, there remains a critical need for empirical research in diverse sociocultural and institutional contexts, particularly in Sub-Saharan Africa, to strengthen evidence-based approaches to inclusive higher education.

In response to these gaps, the present study empirically examines the effectiveness of university-based educational interventions on adaptive functioning and employment readiness among students with mild intellectual disability. By focusing on functional and vocational outcomes, the study contributes to diagnosis-informed support frameworks and advances the conceptualization of universities as integral components of multidisciplinary treatment and

rehabilitation systems. Ultimately, this research seeks to inform policy, practice, and programme development aimed at enhancing long-term independence, employability, and quality of life for students with intellectual disabilities in higher education.

### Research Objectives

The study investigated the effectiveness of university-based educational interventions on adaptive functioning and employment readiness of students with mild intellectual disability in higher education institutions. Specifically, the study sought to:

1. Examine the effect of university-based educational interventions on the adaptive functioning of students with mild intellectual disability.
2. Assess the effect of university-based educational interventions on the employment readiness of students with mild intellectual disability in higher education institutions.

### Research Questions

The following research questions guided the study:

1. To what extent do university-based educational interventions influence the adaptive functioning of students with mild intellectual disability?
2. To what extent do university-based educational interventions influence the employment readiness of students with mild intellectual disability in higher education institutions?

### Research Hypotheses

The following null hypotheses were formulated and tested at the 0.05 level of significance:

1. There is no statistically significant difference in the adaptive functioning of students with mild intellectual disability who participate in university-based educational interventions based on gender.
2. There is no statistically significant difference in employment readiness of students with mild intellectual disability who participate in university-based educational interventions based on age group.
3. Adaptive Functioning (AF) and Employment Readiness (ER) do not jointly have a statistically

significant effect on the overall effectiveness of university-based educational interventions for students with mild intellectual disability.

## **METHODOLOGY**

### **Research Design**

This study employed a quantitative descriptive survey design to examine the effectiveness of university-based educational interventions on the adaptive functioning (AF) and employment readiness (ER) of students with mild intellectual disability in higher education institutions. The design was considered appropriate as it allows for the systematic collection and analysis of quantitative data, providing an objective assessment of participants' perceptions of functional and psychosocial outcomes associated with university-based interventions. By focusing on measurable variables, the design facilitated a clear understanding of the extent to which therapeutically-oriented educational supports contribute to adaptive and employment-related skill development within the target population.

### **Participants / Diagnostic Confirmation**

All participants were final-year undergraduate students diagnosed with mild intellectual disability, as defined by the DSM-5, ICD-11, and AAIDD criteria. The diagnoses were confirmed before university admission by licensed clinical psychologists and/or certified special educators, based on standardized assessments and clinical records. Documentation included IQ testing, adaptive behavior scales, and educational reports, ensuring that all students met established criteria for mild intellectual disability. The clinical confirmation served as a baseline for monitoring functional progress during university-based interventions, linking adaptive functioning improvements directly to treatment-related outcomes.

### **Framing of University-Based Educational Interventions**

The interventions provided in the participating universities were framed as psychosocial and functional treatment modalities embedded within academic programs, rather than purely educational supports. These interventions included structured skill development, social integration activities, mentoring, problem-solving exercises, and career preparation, all designed to enhance adaptive functioning, including communication, decision-making, self-care, and social

participation while simultaneously fostering employment readiness. By situating these interventions within a therapeutic and functional context, the study emphasizes that universities serve as ecological systems that support the psychosocial treatment of mild intellectual disability, in which educational, social, and vocational supports operate synergistically to promote independent living and workforce preparedness.

### **Study Area**

This study was conducted in two public universities located in the South-South geopolitical zone of Nigeria: the University of Calabar (Cross River State) and the University of Uyo (Akwa Ibom State). Specifically, the research was conducted within the Departments of Special Education at the University of Calabar and the Department of Special Education at the University of Uyo. Both institutions are situated within an urban-academic context. They are recognized for their commitment to inclusive higher education through the provision of structured support services and inclusive policies for students with disabilities. Notably, these universities offer inclusive educational programmes that facilitate the admission, academic participation, and skill development of students with mild intellectual disability.

### **Population of the Study**

The study population comprised 92 final-year undergraduate students diagnosed with mild intellectual disability enrolled in university-based educational programmes at selected Nigerian universities. Participants were drawn from the Departments of Special Education within the Faculty of Educational Foundation Studies, where structured inclusive educational interventions are provided for students with intellectual disabilities. Specifically, the population included 55 final-year students from the University of Calabar, Cross River State (28 males and 27 females), and 37 final-year students from the University of Uyo, Akwa Ibom State (22 males and 15 females). All participants were enrolled in the same academic discipline and had received comparable academic instruction, accommodations, and skill-oriented training throughout their undergraduate programmes.

### **Sample and Sampling Technique**

A sampling technique was not employed in this study because the entire population of 92 final-year

undergraduate students with mild intellectual disability enrolled in university-based educational programmes was included. Given the manageable population size, a census approach was adopted, ensuring that all eligible students from the University of Calabar and the University of Uyo were fully represented. The use of a census method enhanced the study's accuracy and representativeness by eliminating potential sampling bias.

### **Instrument for Data Collection**

Data for the study were collected using a self-developed, structured questionnaire titled *University-Based Educational Interventions Questionnaire (UBEIQ)*. The instrument was designed to assess the effectiveness of university-based educational interventions on students' adaptive functioning and employment readiness with mild intellectual disability in higher education institutions. The questionnaire comprised three sections. Section A measured Adaptive Functioning (AF); Section B measured Employment Readiness (ER); and Section C assessed the overall effectiveness of university-based educational interventions, which served as the dependent variable in the study. Sections A, B, and C each contained 10 items, yielding a total of 30 structured items. All items were rated on a four-point Likert scale ranging from Strongly Agree (4), Agree (3), Disagree (2), to Strongly Disagree (1). To enhance transparency and ensure replicability, the exact items used in the instrument are presented as follows. The Adaptive Functioning items (Items 1-10) included: (1) University-based educational programmes have improved my ability to manage daily academic tasks independently; (2) I can communicate my needs and ideas more effectively as a result of my university learning experiences; (3) My participation in university activities has enhanced my social interaction skills; (4) University instruction has helped me follow rules, schedules, and routines more consistently; (5) I am better able to solve everyday problems because of skills learned at the university; (6) University learning experiences have improved my self-care and personal responsibility skills; (7) I can work more independently on tasks without constant supervision; (8) I am more confident in making decisions related to my academic and daily life; (9) University-based support services have helped me adapt better to new situations; and (10) Overall, university education has enhanced my ability to function independently in daily life.

The Employment Readiness items (Items 11-20) were: (11) University education has helped me develop

skills needed for future employment; (12) I am confident in my ability to perform basic job-related tasks; (13) University training has improved my ability to work effectively with others; (14) I understand workplace rules and expectations better because of my university experience; (15) I can follow instructions and complete assigned tasks within given timeframes; (16) University learning experiences have improved my problem-solving skills in work-related situations; (17) I feel prepared to participate in job interviews or employment assessments; (18) I can manage work-related stress and challenges effectively; (19) University-based career support services have enhanced my readiness for employment; and (20) Overall, university education has prepared me for gainful employment.

The Effectiveness of University-Based Educational Interventions items (Items 21-30) included: (21) University-based educational interventions have positively influenced my overall development; (22) The support services provided by my university effectively address my learning and developmental needs; (23) University programmes have helped me become more independent in academic and daily activities; (24) The teaching methods used in my university support my learning effectively; (25) Participation in university programmes has improved my confidence in handling real-life challenges; (26) University-based interventions have prepared me for life after graduation; (27) The skills I gained at the university are helpful for both daily living and employment; (28) Overall, the university environment has supported my personal and academic growth; (29) University-based educational interventions meet the needs of students with mild intellectual disability; and (30) Overall, university-based educational interventions have been effective in supporting my transition to adulthood and employment. The instrument was developed using simple, clear, and unambiguous language to enhance comprehension and ensure appropriate responses from students with mild intellectual disability.

### **Validity of the Instrument**

The University-Based Educational Interventions Questionnaire (UBEIQ) was carefully evaluated to ensure it was suitable for measuring adaptive functioning (AF), employment readiness (ER), and the overall effectiveness of university-based educational interventions (EUI) among students with mild intellectual disability. The instrument underwent face

and content validation by four experts, including two professors from the Departments of Special Education, Educational Psychology, and Curriculum Studies, and two professors from the Department of Measurement and Evaluation. All reviewers had over ten years of teaching and research experience. The experts examined the questionnaire for clarity of language, relevance of items to the study variables, appropriateness for students with mild intellectual disability, and adequacy of coverage of the constructs under investigation. Based on their feedback, minor modifications were made to improve item clarity, remove ambiguities, and ensure developmental appropriateness.

To quantify the content validity of the instrument, the Content Validity Index (CVI) was calculated separately for each section. The results indicated strong agreement among the experts, with a CVI of 0.88 for Adaptive Functioning, 0.85 for Employment Readiness, and 0.87 for Effectiveness of University-Based Educational Interventions. These values demonstrate that the UBEIQ has robust content validity and is appropriate for assessing the effectiveness of university-based educational interventions for students with mild intellectual disability.

### **Reliability of the Instrument**

The reliability of the University-Based Educational Interventions Questionnaire (UBEIQ) was established through a pilot study involving 30 students with mild intellectual disability drawn from Ebonyi State University and Enugu State University in the South-East geopolitical zone of Nigeria, which were not included in the main study sample. This ensured that the pilot data did not overlap with the primary research population. The data from the pilot study were analyzed using Cronbach's Alpha to assess the instrument's internal consistency. The results indicated reliability coefficients of 0.78 for the Adaptive Functioning subscale, 0.82 for the Employment Readiness subscale, and 0.80 for the Effectiveness of University-Based Educational Interventions subscale. All coefficients exceeded the acceptable threshold of 0.70, demonstrating that the UBEIQ has high internal consistency. These findings confirm that the instrument is both reliable and suitable for collecting data on adaptive functioning, employment readiness, and the overall effectiveness of university-based educational interventions among students with mild intellectual disability in the main study.

### **Procedure for Data Collection**

Data for this study were collected over four weeks to ensure complete coverage of the target population and to maximize participation across the participating universities. Before data collection, necessary approvals were obtained from university authorities, and informed consent was secured from all participants. Given the study population and the need for clarity during questionnaire completion, a face-to-face administration approach was adopted. The researcher, assisted by trained research aides, administered the questionnaires directly to students during scheduled lecture periods and designated meeting times within the Departments of Special Education at the University of Calabar and the University of Uyo. This method allowed for direct interaction with respondents, provided opportunities for immediate clarification of items, and ensured that responses were completed accurately and in full.

The face-to-face approach was particularly suitable for students with mild intellectual disability, as it enhanced comprehension of the questionnaire items and improved response accuracy. Participants were guided on how to complete the questionnaire independently, with minimal assistance provided only when clarification was needed to avoid introducing response bias. Completed questionnaires were retrieved immediately after administration, minimizing the risk of loss and ensuring a high return rate. This structured, supportive data collection procedure facilitated comprehensive participation from the entire study population and contributed to the quality, reliability, and completeness of the data for subsequent analysis.

### **Method of Data Analysis**

The data collected for this study were coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS). Before analysis, the data were carefully screened for completeness and accuracy to ensure reliability. Descriptive statistics, including means and standard deviations, were used to summarize respondents' perceptions of the influence of university-based educational interventions on adaptive functioning and employment readiness, thereby answering the research questions. A mark of 2.50 on the four-point Likert scale was adopted as the decision criterion: mean scores  $\geq 2.50$  indicated agreement, while mean scores  $< 2.50$  indicated disagreement with the statements. The study's null hypotheses were

tested at a 0.05 level of significance. Independent-samples t-tests were used to test Hypotheses One and Two, examining differences in adaptive functioning and employment-readiness outcomes, as applicable. Multiple regression analysis was conducted to test Hypothesis Three, assessing the joint effect of adaptive functioning and employment readiness on the overall effectiveness of university-based educational interventions. Results from the inferential analyses were interpreted using the relevant test statistics, p-values, and decision rules to determine whether the null hypotheses were accepted or rejected. This approach provided an objective assessment of the impact of university-based educational interventions on the study's outcome variables. Of the 92 questionnaires administered, 84 were completed and returned correctly, for a response rate of 91.3%. Of the returned questionnaires, 46 were from male participants and 38 from female participants, and all were used for the data analysis.

### Ethical Considerations

The study was conducted in accordance with strict ethical standards to protect the rights and well-being of all participants. Participation was voluntary, and respondents were fully informed of the study's purpose. They were assured of confidentiality and anonymity, with no identifying information collected, and that all data would be used solely for academic purposes. The

research adhered to established ethical principles guiding studies involving individuals with intellectual disabilities, including respect for persons, beneficence, and non-maleficence, ensuring that participants were treated with dignity and that their participation posed no harm.

### RESULTS

The analysis presented in Table 1 revealed that university-based educational interventions have a generally positive impact on the adaptive functioning (AF) of students with mild intellectual disability. Responses from 84 participants across ten items measuring domains such as academic independence, communication, social interaction, problem-solving, self-care, decision-making, and adjustment to new situations showed that mean scores ranged from 2.52 to 3.70 on a 4-point Likert scale, with all items falling within the "Agree" range. Participants reported the most significant improvements in communication skills (AF2,  $M = 3.70$ ,  $SD = 0.723$ ) and problem-solving abilities (AF5,  $M = 3.70$ ,  $SD = 0.911$ ), suggesting that university-based interventions most positively influenced these aspects of adaptive functioning. Items related to routine adherence (AF4,  $M = 2.52$ ,  $SD = 1.091$ ) and self-care/personal responsibility (AF6,  $M = 2.60$ ,  $SD = 1.128$ ) received comparatively lower scores, indicating moderate enhancement, but still reflecting meaningful improvement.

**Table 1: Descriptive Statistics on the Extent to which University-Based Educational Interventions Enhance Students' Adaptive Functioning**

S/N	Item Statement on AF	N	Mean	SD	Decision
AF1	University-based educational programmes have improved my ability to manage daily academic tasks independently.	84	3.25	1.31	Agree
AF2	I can communicate my needs and ideas more effectively as a result of my university learning experiences.		3.70	0.72	
AF3	My participation in university activities has enhanced my social interaction skills.		3.35	1.21	
AF4	University instruction has helped me follow rules, schedules, and routines more consistently.		2.52	1.09	
AF5	I am better able to solve everyday problems because of skills learned at the university.		3.70	0.91	
AF6	University learning experiences have improved my self-care and personal responsibility skills.		2.60	1.12	
AF7	I can work more independently on tasks without constant supervision.		3.05	0.87	
AF8	I am more confident in making decisions related to my academic and daily life.		3.25	0.77	
AF9	University-based support services have helped me adapt better to new situations.		3.40	1.21	
AF10	University education has enhanced my ability to function independently in daily life.		3.55	0.81	
	Cluster Mean		3.24	1.01	

**Key:** N = Number of Respondents; SD = Standard Deviation.

The overall cluster mean of 3.24 (SD = 1.006) indicates general agreement among participants that university programs significantly enhance their ability to function independently in academic, social, and daily living contexts. Collectively, the data suggest that inclusive university programs provide students with mild intellectual disabilities with practical skills that enhance independence, socialization, and adjustment to academic and life challenges. In conclusion, the analysis in Table 1 indicates that university-based educational interventions significantly enhance adaptive functioning, highlighting the effectiveness of structured academic instruction, targeted support, and skill development programs in promoting independence and life skills among students with mild intellectual disability.

The analysis presented in Table 2 revealed that university-based educational interventions positively influence students' employment readiness (ER) with mild intellectual disability. Data from 84 participants across ten items assessing skills, confidence, teamwork, problem-solving, adherence to workplace rules, stress management, career support utilization, and overall preparedness for employment showed that mean scores ranged from 2.55 to 3.50 on a 4-point Likert scale, with all items falling within the "Agree" range. The highest-rated item was ER5, "I can follow instructions and complete assigned tasks within given

timeframes" (M = 3.50, SD = 1.038), indicating that students perceived the most significant improvement in task completion and adherence to workplace instructions. Other high-rated items included ER9, "University-based career support services have enhanced my readiness for employment" (M = 3.45, SD = 0.749), and ER1, "University education has helped me develop skills needed for future employment" (M = 3.35, SD = 0.580), highlighting the importance of career support and skill acquisition as key outcomes of the interventions. The lowest mean score was for ER2, "I am confident in my ability to perform basic job-related tasks" (M = 2.55, SD = 0.876), suggesting that, while students generally recognize improvements in employment readiness, some still feel less confident about performing work-related tasks. Items related to collaboration (ER3, M = 3.05) and problem-solving in work contexts (ER6, M = 2.95) received moderate scores, reflecting incremental gains in these areas.

The overall cluster mean of 3.15 (SD = 0.869) indicates a general perception that university-based educational interventions meaningfully enhance students' employment-readiness. Collectively, the data suggest that participation in structured university programs equips students with foundational skills, confidence, and knowledge that support their transition to the workforce. In conclusion, the analysis in Table 2

**Table 2: Descriptive Statistics on the Extent to which University-Based Educational Interventions Enhance Students' Readiness for Employment**

S/N	Item Statement on ER	N	Mean	SD	Decision
ER1	University education has helped me develop skills needed for future employment.	84	3.35	0.57	Agree
ER2	I am confident in my ability to perform basic job-related tasks.		2.55	0.87	
ER3	University training has improved my ability to work effectively with others.		3.05	0.98	
ER4	I understand workplace rules and expectations better because of my university experience.		2.85	0.80	
ER5	I can follow instructions and complete assigned tasks within given timeframes.		3.50	1.03	
ER6	University learning experiences have improved my problem-solving skills in work-related situations.		2.95	0.93	
ER7	I feel prepared to participate in job interviews or employment assessments.		3.20	0.88	
ER8	I am able to manage work-related stress and challenges effectively.		3.25	1.05	
ER9	University-based career support services have enhanced my readiness for employment.		3.45	0.74	
ER10	University education has prepared me for gainful employment.		3.30	0.79	
	Cluster Mean		3.15	0.86	

**Key:** N = Number of Respondents; SD = Standard Deviation.

shows that university-based educational interventions positively enhance employment readiness, fostering the practical skills, work-related behaviors, and confidence that students with mild intellectual disability need to adapt successfully to workplace settings.

### Hypothesis One

There is no statistically significant difference in the adaptive functioning of students with mild intellectual disability who participate in university-based educational interventions based on gender.

The data analysis in Table 3 presents the results of the independent-samples *t*-test conducted to examine gender differences in adaptive functioning among students with mild intellectual disability participating in university-based educational interventions. The analysis was carried out at the 0.05 significance level.

The findings indicate that, for most of the adaptive functioning items, there were no statistically significant differences between male and female respondents. Specifically, Items 1, 2, 3, 4, 6, 7, 8, and 10 showed *p*-values greater than 0.05, indicating that the observed mean differences between male and female students on these aspects of adaptive functioning were not statistically significant. However, statistically significant gender differences were observed in two items. Item 5 revealed a significant difference between male and female respondents ( $p = .019$ ), with male students scoring higher than their female counterparts. Similarly, Item 9 also showed a statistically significant difference ( $p = .001$ ), again in favour of male respondents. These results suggest that gender-related differences existed in specific components of adaptive functioning measured by these items. Despite these item-level differences, the comparison of the overall adaptive

**Table 3: Item-by-Item Analysis using an Independent T-Test on the Adaptive Functioning of Students with Intellectual Disability and University-Based Educational Intervention Based on Gender**

Items	Category's of Respondents'	N	Mean	SD	df	t-cal	Alpha	p-val	Decision
1	Male Repondents	46	3.3077	1.27631	82	.910	0.05	.087	NS
	Female Respondents	38	3.0323	1.42557					
2	Male Repondents	46	3.6923	.75507	82	.091	0.05	.877	NS
	Female Respondents	38	3.6774	.65254					
3	Male Repondents	46	3.4423	1.14470	82	1.474	0.05	.052	NS
	Female Respondents	38	3.0323	1.35361					
4	Male Repondents	46	2.1538	1.07347	82	-.030	0.05	.674	NS
	Female Respondents	38	2.1613	1.12833					
5	Male Repondents	46	3.7692	.80721	82	1.192	0.05	.019	S
	Female Respondents	38	3.5161	1.12163					
6	Male Repondents	46	2.6731	1.09761	82	1.362	0.05	.095	NS
	Female Respondents	38	2.3226	1.19407					
7	Male Repondents	46	3.0385	.83927	82	-.458	0.05	.415	NS
	Female Respondents	38	3.1290	.92166					
8	Male Repondents	46	3.2692	.76991	82	-.120	0.05	.880	NS
	Female Respondents	38	3.2903	.78288					
9	Male Repondents	46	3.5385	1.09296	82	1.819	0.05	.001	S
	Female Respondents	38	3.0323	1.42557					
10	Male Repondents	46	3.5577	.77746	82	-.126	0.05	.932	NS
	Female Respondents	38	3.5806	.84751					
	Male Repondents	46	32.442	9.633	82	0.611	0.05	0.403	NS
	Female Respondents	38	30.774	10.853					

**Key:** N = number of respondents; SD = standard deviation; df = degrees of freedom; t-cal = calculated t-value; p-value = level of significance; NS = not significant.

functioning scores showed no statistically significant difference between male and female students. The total mean score for male respondents ( $M = 32.44$ ,  $SD = 9.63$ ) was not significantly different from that of female respondents ( $M = 30.77$ ,  $SD = 10.85$ ), as the obtained  $p$ -value (.403) exceeded the 0.05 significance level. Overall, the results indicate that gender does not have a significant influence on the general adaptive functioning of students with mild intellectual disability who participate in university-based educational interventions. Consequently, the null hypothesis that there is no statistically significant difference in adaptive functioning by gender is retained.

### Hypothesis Two

There is no statistically significant difference in employment readiness of students with mild intellectual

disability who participate in university-based educational interventions based on age group.

The data in Table 4 present the results of an independent-samples  $t$ -test conducted to examine whether age group significantly influences the employment readiness of students with mild intellectual disability who participate in university-based educational interventions. The null hypothesis stated that there is no statistically significant difference in employment readiness across age groups. The analysis compared respondents aged 20 years and below with those aged 20 years and above, using a 0.05 level of significance. The item-by-item analysis (Items 11-20) indicates that there were no statistically significant differences between the two age groups across all employment readiness items. For Item 11, respondents below 20 years ( $M = 3.30$ ,  $SD = 0.54$ ) did

**Table 4: Item-by-Item Analysis using an Independent T-Test on the Employment Readiness of Students with Mild Intellectual Disability and University-Based Educational Intervention Based on Age Group**

Items	Respondents Category	N	Mean	SD	df	t-cal	Alpha	p-val	Decision
11	Respondents below 20 years	51	3.3000	.54398	82	-.734	0.05	.184	NS
	Respondents with 20 years and above	33	3.3939	.60927					
12	Respondents below 20 years	51	2.5400	.88548	82	.128	0.05	.516	NS
	Respondents with 20 years and above	33	2.5152	.83371					
13	Respondents below 20 years	51	3.0200	.97917	82	.090	0.05	.548	NS
	Respondents with 20 years and above	33	3.0000	1.00000					
14	Respondents below 20 years	51	2.7800	.78999	82	-.549	0.05	.947	NS
	Respondents with 20 years and above	33	2.8788	.81997					
15	Respondents below 20 years	51	3.4200	1.07076	82	-.805	0.05	.137	NS
	Respondents with 20 years and above	33	3.6061	.96629					
16	Respondents below 20 years	51	3.0000	.90351	82	.592	0.05	.540	NS
	respondents with 20 years and above	33	2.8788	.92728					
17	Respondents below 20 years	51	3.2000	.85714	82	.093	0.05	.756	NS
	respondents with 20 years and above	33	3.1818	.88227					
18	Respondents below 20 years	51	3.2400	1.09842	82	-.010	0.05	.655	NS
	respondents with 20 years and above	33	3.2424	1.03169					
19	Respondents below 20 years	51	3.4400	.73290	82	-.452	0.05	.968	NS
	respondents with 20 years and above	33	3.5152	.75503					
20	Respondents below 20 years	50	3.4000	.75593	82	1.071	0.05	.576	NS
	Respondents with 20 years and above	33	3.2121	.81997					
	Respondents below 20 years	51	31.34	8.617	82	-0.574	0.05	0.583	NS
	Respondents with 20 years and above	33	31.424	8.645					

**Key:** N = number of respondents; SD = standard deviation; df = degrees of freedom; t-cal = calculated t-value; p-value = level of significance; NS = not significant.

not differ significantly from respondents aged 20 years and above ( $M = 3.39$ ,  $SD = 0.61$ ), as the obtained  $p$ -value (.184) exceeded the 0.05 significance level. Similarly, Items 12 and 13 revealed no statistically significant differences between the two age groups, with  $p$ -values of .516 and .548, respectively, suggesting comparable levels of employment readiness across age groups. Further results for Items 14 through 20 consistently showed  $p$ -values greater than 0.05, indicating that age group did not significantly influence any specific dimension of employment readiness assessed in the study. Although respondents aged 20 years and above recorded slightly higher mean scores on some items (such as Items 15 and 19), while respondents below 20 years scored marginally higher on others (such as Items 16 and 20), these differences were not statistically significant. This pattern shows a generally similar employment-readiness profile across the two age categories. The comparison of overall employment-readiness scores further supports these findings. Respondents below 20 years recorded a mean score of 31.34 ( $SD = 8.62$ ), while respondents aged 20 years and above recorded a mean score of 31.42 ( $SD = 8.65$ ). The observed difference in overall employment readiness was not statistically significant ( $t = -0.574$ ,  $p = .583$ ). In summary, the results in Table 4 indicate that age group does not have a statistically significant effect on the employment readiness of students with mild intellectual disability participating in university-based educational interventions. Consequently, the null hypothesis that there is no statistically significant difference in employment readiness across age groups is retained.

### Hypothesis Three

Adaptive Functioning (AF) and Employment Readiness (ER) do not jointly have a statistically significant effect on the overall effectiveness of university-based educational interventions for students with mild intellectual disability.

The analysis presented in Table 5 examined whether Adaptive Functioning (AF) and Employment Readiness (ER) jointly predict the overall effectiveness of university-based educational interventions for students with mild intellectual disability. The regression model produced a correlation coefficient of  $R = 0.225$  and an  $R^2 = 0.05$ , indicating that only 5% of the variance in overall intervention effectiveness is explained by the combined effects of AF and ER. The adjusted  $R^2$  of -0.001 suggests that the model does not meaningfully improve predictions beyond chance, given the number of predictors. Additionally, the ANOVA results showed that the regression model was not statistically significant ( $F(2,37) = 0.983$ ,  $p = 0.384$ ), exceeding the conventional alpha level of 0.05. These findings indicate that the combined effect of AF and ER on overall intervention effectiveness is not statistically significant. Examining the individual predictors, Adaptive Functioning (AF) had a negative regression coefficient ( $B = -0.139$ ;  $t = -1.286$ ;  $p = 0.206$ ), suggesting that AF does not significantly predict overall intervention effectiveness on its own. Similarly, Employment Readiness (ER) had a minimal positive coefficient ( $B = 0.006$ ) with  $t = 0.057$ ,  $p = 0.955$ , indicating that ER also does not significantly contribute

**Table 5: Multiple Regression on Adaptive Functioning (AF) and Employment Readiness (ER) Do not Jointly Have a Statistically Significant Effect on the Overall Effectiveness of University-Based Educational Interventions for Students with Mild Intellectual Disability**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.225a	0.05	-0.001	2.40565	
	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	11.376	2	5.688	0.983	.384b
Residual	214.124	77	5.787		
Total	225.5	79			
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>		<b>Sig.</b>
(Constant)	34.008	3.597		9.455	0.00
AF	-0.139	0.108	-0.229	-1.286	0.206
ER	0.006	0.104	0.01	0.057	0.955

**Key:** R - Correlation Coefficient; B - Regression Coefficient;  $R^2$  - Coefficient of Determination; Sig - Significance (p-value).

to predicting overall effectiveness when considered individually.

Overall, the results indicate that neither the combined nor the individual effects of AF and ER significantly predict the perceived effectiveness of university-based educational interventions. The low  $R^2$  value further suggests that other unmeasured factors, such as program design, instructional quality, mentoring, peer support, or institutional resources, may play a more substantial role in shaping overall program outcomes. Based on this analysis, the null hypothesis is retained, indicating that Adaptive Functioning and Employment Readiness do not jointly exert a statistically significant effect on the overall effectiveness of university-based interventions. While improvements in AF and ER are observed individually, their direct contribution to overall program effectiveness appears limited, highlighting the potential influence of broader contextual and programmatic factors.

## DISCUSSION OF THE FINDINGS

The findings of this study demonstrate that university-based educational interventions positively influence both adaptive functioning and employment readiness among students with mild intellectual disability, and that these outcomes are largely consistent across gender and age groups. The independent samples t-test analyses indicated no statistically significant gender differences in overall adaptive functioning and no significant age-group differences in employment readiness. Although isolated item-level gender differences were observed in specific adaptive functioning domains, these did not translate into meaningful differences at the aggregate level. This pattern suggests that inclusive university interventions provide relatively equitable developmental opportunities, supporting the acquisition of functional skills regardless of students' demographic characteristics. Such findings are consistent with the core assumptions of the Adaptive Functioning Framework, which emphasizes functional competence, participation, and environmental supports as primary outcomes of intervention rather than fixed individual attributes such as age or gender.

Improvements reported across communication, problem-solving, social interaction, self-care, decision-making, and adjustment to university environments further reinforce the effectiveness of structured academic and support services in higher education. These gains align with previous studies showing that

inclusive postsecondary programs foster adaptive functioning by embedding skill development within real-life academic and social contexts [21,23,26]. From a social learning theory perspective, these outcomes reflect the roles of modeling, guided practice, and reinforcement in university settings, where students learn functional behaviors through repeated interactions with peers, lecturers, and support personnel. The largely uniform adaptive functioning outcomes across gender groups further suggest that these learning processes operate similarly for male and female students when comparable supports and learning opportunities are provided.

Similarly, the findings related to employment readiness indicate that students across age groups benefited comparably from university-based educational interventions. The absence of statistically significant differences between students below 20 years and those aged 20 years and above, both at item and overall score levels, suggests that employment-related competencies can be effectively developed across developmental stages within higher education. Reported improvements in task completion, workplace behavior, teamwork, and utilization of career support services are consistent with earlier research highlighting the value of inclusive postsecondary and transition-oriented programs in strengthening employability skills [28-32]. These results resonate with ecological systems theory, which conceptualizes universities as complex environments where instructional practices, institutional supports, peer engagement, and experiential learning collectively shape employment readiness, independent of age-related differences.

The findings from this study suggest that while students with mild intellectual disability (MID) show improvements in adaptive functioning (AF) and employment readiness (ER), these gains alone do not fully explain how they perceive the overall effectiveness of university-based interventions. The regression model indicated that AF and ER together accounted for only a small portion of the variation in students' ratings ( $R^2 = 0.05$ ), and this was not statistically significant. In other words, students' sense of how effective the interventions were is influenced by factors beyond individual skill improvements. Factors such as program quality, teaching methods, mentoring, peer support, social inclusion, and access to resources likely play a greater role in shaping their overall experience. Looking through the lens of ecological systems theory, universities can be seen as complex environments in

which structural, social, and programmatic supports interact to shape outcomes. This perspective helps explain why AF and ER, while important, are not enough on their own to predict students' overall impressions.

It is essential to clarify that "Overall Effectiveness" in this study refers to a broad, integrative concept that captures students' perceptions of benefits across several areas: academic performance, emotional well-being, social engagement, vocational skills, and independent living. AF and ER measure specific abilities, but Overall Effectiveness reflects the students' overall experience with the intervention. This distinction helps explain why the regression results were weak: skill improvements are only part of what shapes students' holistic perceptions. Another critical point is that these findings are based entirely on students' self-reports using the University-Based Educational Interventions Questionnaire (UBEIQ). While self-reports are valuable for understanding students' experiences and feelings, they are subjective. They can be influenced by biases, such as a desire to provide socially desirable answers or an overestimation of progress. The study did not include additional perspectives—such as teacher evaluations, standardized functional assessments, or direct measures of work performance—so the results reflect students' perceptions rather than objective measures of competence. Future research should include multiple data sources to provide a more complete picture of how effective these interventions really are. Despite these limitations, the results offer valuable insights for clinical practice and rehabilitation. Improvements in adaptive skills, such as communication, daily living, social interaction, and decision-making, closely align with areas routinely assessed in functional evaluations. This suggests that university-based interventions can help students develop practical skills that are central to independent living and participation in adult life.

The study also highlights the value of universities as structured but natural environments where students can practice academic tasks, social interaction, and skill development at the same time. Such settings support the real-world application of skills, which is an essential goal of rehabilitation programs. Moreover, gains in employment readiness and functional independence indicate that inclusive postsecondary education may serve as a bridge from secondary school to adulthood, including work and community participation. These findings support integrating university-based interventions into coordinated

transition programs that combine education, vocational support, and adult services.

Overall, this study suggests that university-based interventions can play a meaningful role in supporting students with intellectual disabilities in their lifelong development. By offering opportunities for functional skill building, vocational preparation, and social participation in inclusive settings, universities can help students achieve greater independence and engagement in adult life. These findings reinforce the idea that functional outcomes are shaped more by the opportunities and supports students experience than by their personal characteristics alone. Inclusive, supportive learning environments allow universities to act as adaptive systems that nurture both independence and employability. For students with MID, holistic interventions that address not only skills but also social and environmental supports are essential for meaningful participation and long-term success.

## CONCLUSION

This study provides evidence that university-based educational interventions positively influence adaptive functioning and employment readiness among students with mild intellectual disability. Participants demonstrated notable improvements in communication, problem-solving, social interaction, self-care, and employment preparedness. Importantly, these benefits were largely consistent across gender and age groups, indicating that inclusive postsecondary programs can provide equitable opportunities for skill development. While adaptive functioning and employment readiness are important outcomes, they alone did not fully predict students' overall perceptions of program effectiveness. This highlights the importance of broader contextual and environmental factors, including supportive instructional practices, peer engagement, mentoring, and institutional resources, in shaping the overall impact of higher education interventions.

Grounded in the Adaptive Functioning Framework, social learning theory, and ecological systems theory, the findings underscore the critical role of universities as supportive ecological systems that foster functional competence, independence, and employability. By integrating academic instruction with structured support, experiential learning, and social inclusion, higher education institutions can effectively equip students with intellectual disabilities to participate meaningfully in academic, social, and occupational

domains. In conclusion, inclusive university programs are effective in promoting life and work-related skills for students with mild intellectual disability, and future interventions should continue to adopt a holistic, evidence-based approach that addresses both individual skill development and the broader educational environment.

## RECOMMENDATIONS

Based on the findings of this study, several recommendations are proposed to enhance the effectiveness of university-based educational interventions for students with mild intellectual disability:

1. Universities should implement targeted programs to develop further students' self-care, routine adherence, and personal responsibility. Tailored interventions, individualized coaching, and skill-building workshops can help address areas where students show moderate gains.
2. Institutions should expand career-oriented programs, including internships, job shadowing, and experiential learning opportunities, to improve confidence, problem-solving, and practical workplace skills. Strengthening engagement with career support services can better prepare students for successful workforce integration.
3. Given that adaptive functioning and employment readiness alone do not fully explain overall intervention effectiveness, universities should adopt comprehensive program designs that integrate academic, vocational, social, and institutional supports. This includes mentorship, peer support networks, accessible learning resources, and ongoing monitoring of student progress.
4. Faculty and support staff should receive ongoing training on inclusive teaching strategies, differentiated instruction, and the use of assistive technologies to better support students with intellectual disabilities in both academic and vocational contexts.
5. Future studies should investigate additional factors influencing the overall effectiveness of university interventions, such as program structure, institutional resources, student motivation, and social support systems.

Longitudinal studies may provide deeper insights into the long-term impact of higher education programs on adaptive functioning, employment readiness, and life outcomes.

6. Policymakers and university administrators should prioritize allocating resources to inclusive education initiatives, ensuring sustainable funding, accessible facilities, and evidence-based programming that promote both academic and vocational success for students with intellectual disabilities.

## LIMITATIONS

This study was confined to students with mild intellectual disability enrolled in selected Nigerian universities, which may limit the generalizability of the findings to other regions, institutional contexts, or students with differing levels of intellectual disability. The reliance on self-reported data through structured questionnaires introduces the possibility of social desirability and response biases, as participants may have provided answers that reflect perceived expectations rather than their actual experiences. Consequently, adaptive functioning, employment readiness, and perceptions of intervention effectiveness may have been somewhat overestimated. Moreover, the study focused primarily on adaptive functioning and employment readiness as predictors of intervention outcomes, leaving other potentially influential factors—such as program design, instructional quality, mentoring, peer support, and institutional resources—unexamined. The cross-sectional design further limits the ability to track long-term outcomes, including post-graduation employment, independent living, and sustained skill development. Future research should consider broader, more diverse samples across multiple regions and institutional types, adopt longitudinal designs to track student outcomes over time, and integrate mixed-method approaches, including qualitative techniques such as interviews, focus groups, or observations. These strategies would yield richer, contextually grounded insights into the factors shaping the effectiveness of university-based interventions for students with intellectual disability.

## LIST OF ABBREVIATIONS

AF = Adaptive Functioning

ER = Employment Readiness

SD	= Standard Deviation
R <sup>2</sup>	= Coefficient of Determination
ANOVA	= Analysis of Variance
F	= F-Statistic
T	= t-Statistic
B	= Regression Coefficient
P	= Probability Value
N	= Number of Respondents
df	= Degrees of Freedom
t-cal	= Calculated t-value
p-value	= Significance
NS	= Not Significant

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article.

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