



Artificial Intelligence Tools for Enhancing Inclusive, Personalised and Developmental Student Support Services in Public Universities in Rivers State, Nigeria

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ABSTRACT

Original Research Article

The purpose of this study is to explore the use of artificial intelligence tools for providing inclusive, personalized and developmental student support services in selected public universities in Rivers State. The study was guided by three objectives, three research questions and three hypotheses. Methods: A descriptive survey design was used with a population of 92,836, (92,570 university students and 266 administrative staff) from three universities. The survey was sent to 541 respondents, of whom 382 were students and 159 members of the administrative staff, sampled via a multistage sampling method. Three experts validated the instrument, and its reliability was established by Cronbach's alpha, which showed a reliability coefficient of 0.80, 0.88 and 0.76 respectively. Data were analyzed using mean and standard deviation, and hypothesis was tested by z-test at 0.05 level of significance to answer the research questions. Results indicated that AI-based career guidance tools (85%), AI-enabled accessibility tools (82%) and AI-driven feedback systems (80%) support students services to a varying degree. Students and Staff Perceptions of AI Tools There was no statistically significant difference among students and staff members perceptions of the three AI tools. The recommendations were for the government and university management to invest in AI-assisted accessibility technologies, to facilitate an inclusive education environment as well as equitable provisions, supporting students with disabilities and diverse learning needs.

Keywords: Artificial Intelligence, Student Support Services, Accessibility Tools, Student Satisfaction.

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Introduction

Student support services have evolved beyond traditional academic advising to encompass career development, inclusive education, personalized learning and continuous feedback mechanisms. Universities now are expected to provide support systems that respond to students' diverse academic, social and professional needs. Achieving this objective through conventional approaches alone has become increasingly challenging due to growing student populations and limited institutional resources. Student Support Services (SSS) refer to the organized set of academic, administrative, technological and psychosocial interventions designed to

enhance students' learning experiences, promote well-being, improve retention and facilitate academic success (Mohammed & Wey-Amaewhule, 2026). In public universities, these services typically include academic advising, course registration and records management, learning support, library and information services (Mireku et al., 2024), alongside financial support mechanisms such as student loan schemes that have also been shown to influence students' academic performance in Rivers State universities (Longjohn & Amadi, 2025). Institutions that provide adequate support and guidance foster students' confidence in using AI technologies, thereby enhancing their academic performance and engagement (Jeilani & Abubakar, 2025).

Artificial intelligence (AI) is a branch of computer science that involves understanding, simulating and extending human cognitive abilities through the development of intelligent systems that can learn, reason, problem-solve, make decisions and execute tasks that normally require human intelligence. (Mohammed-Shittu, 2025). Artificial intelligence offers new opportunities for improving the efficiency, accessibility and responsiveness of student support services. AI-powered career guidance systems provide personalized career recommendations based on students' interests and competencies, AI-enhanced accessibility tools promote equitable learning opportunities for students with disabilities and diverse learning needs, while AI-driven feedback systems deliver timely and individualized feedback that supports continuous learning improvement. Beyond direct student-facing services, AI is also being adopted to strengthen administrative and supervisory processes in Nigerian public schools, with evidence showing improved efficiency and accountability in areas such as teacher performance evaluation and resource management (Nwuke & Yellowe, 2025).

AI-powered career guidance systems use artificial intelligence to provide personalized career recommendations based on students' interests, skills, academic performance and labour market trends. Examples include SchoolMaster, UNIRANKS and AI-based career advisory platforms.

The traditional career counselling approaches are often limited by time and human capacity, while AI-enabled systems offer scalable, real-time and personalized guidance that enhances students' career readiness and decision-making processes (Westman et al., 2021; Eze et al., 2025). AI-powered systems incorporate automated guidance tools such as chatbots and virtual assistants that support résumé development, cover letter writing and interview preparation. More recently, generative AI tools such as ChatGPT and Google Gemini have expanded the scope of career guidance by providing nuanced, context-aware advice and simulating human-like counselling interactions. In practice, platforms such as LinkedIn Career Explorer leverage AI to map users' skills to potential career pathways, facilitating job matching and career exploration. Thomson et al. (2024) conducted research with 453 university students across multiple institutions to understand their perceptions of AI's impact on education and future careers, findings from the study suggests that AI in career guidance, shows positive results, though a comprehensive body of rigorous evaluation studies is still being built. Researchers emphasize that effective career decision-making often requires consideration of personal values, socio-cultural contexts and evolving labour market conditions that extend beyond algorithmic analysis, hence the need for AI-generated career recommendations to complement rather than replace professional career counsellor (Westman et al., 2021).

AI-enhanced accessibility tools are technologies for supporting students with disabilities and diverse learning needs. These tools leverage artificial intelligence to provide real-time, adaptive assistance through features such as speech-to-text, text-to-speech, optical character recognition (OCR), automated captioning, translation and customizable user interfaces (Guaña-Moya et al., 2025). Accessibility support emphasizes the ease with which students can obtain and benefit from institutional resources and library services directly contribute to this through the provision of both physical and digital learning materials, including books, journals and electronic databases. Innovations such as automated classification system, intelligent retrieval systems and resource recommendations reduce time and effort required to locate relevant materials, thus improving students' overall learning experience (Adeyanju et al., 2024). Students with learning disabilities and neurodiverse conditions benefit from tools like Microsoft Immersive Reader, which offer text simplification, auditory reinforcement and visual customization to enhance comprehension. Similarly, generative AI chatbots such as ChatGPT provide integrated support for reading and writing tasks, reducing anxiety promoting improved academic performance (Zhao et al., 2025). AI-driven translation tools, including Google Translate, further extend accessibility by supporting multilingual learners and students with language-related challenges. These technologies facilitate independent learning, reduce reliance on human assistance and improve students' participation in academic and administrative activities (Oyelere & Aruleba, 2025). AI-enhanced accessibility tools promote equity and inclusion within higher education, by providing personalized support that accommodates diverse learner needs. Zhao et al. (2025) noted that such tools should not be viewed merely as supplementary features but as essential components of equitable education systems, especially within public universities. In the Nigerian context, effective management of the digital learning environment has similarly been identified as central to meeting the needs of students with special needs in public schools (Nwuke & Osuji, 2024).

AI-driven feedback systems are technologies that provide automated, timely and personalized feedback on students' academic activities using artificial intelligence algorithms, natural language processing and machine learning techniques aimed at improving learning outcomes (Lo et al., 2026). Examples include Gradescope, Turnitin Feedback Studio, Coursera AI feedback tools and intelligent assessment platforms. These systems are widely used in higher education to assess assignments, quizzes, coding exercises, essays and other learning activities while providing immediate formative feedback that enables students to identify learning gaps and improve their performance. Ruwe and Kuklick (2026) found that students were divided in their preferences for AI-generated and human generated feedback, while some valued the immediacy and precision of AI feedback, others preferred

the personalized and contextual insights provided by human feedback, suggesting both should be integrated for effectiveness. AI-driven feedback systems also support lecturers by reducing marking workload, improving consistency in assessment and facilitating continuous monitoring of students' learning progress (Zhang et al., 2025). Prompt feedback promotes self-regulated learning, increases student motivation, strengthens critical thinking and enables students to make timely improvements before final assessment. For instance, the Georgia Institute of Technology adopted the Gradescope to streamline grading and provide consistent feedback across large courses. Despite the achievements, scholars have reported limitations relating to generic nature of automatic feedback. Consequently, many universities advocate a hybrid feedback model in which AI-generated feedback complements, rather than replaces, professional academic judgment (Zhang et al., 2025; Lo et al., 2026)

These AI applications contribute significantly to inclusive education, student engagement and institutional effectiveness, although their growing adoption also raises fresh challenges, such as concerns over examination security in an era of AI and social media use (Longjohn & Longjohn, 2026), that institutions must contend with alongside the benefits. Despite their growing global adoption, empirical evidence regarding their perceived effectiveness within Nigerian public universities remains limited. It is against this background that this study examined the extent to which AI-powered career guidance systems, AI-enhanced accessibility tools and AI-driven feedback systems enhance student support services in public universities in Rivers State.

Statement of the Problem

The increasing diversity of university students has created greater demand for personalized career guidance, inclusive educational practices and timely academic feedback. However, many public universities continue to rely on conventional approaches that are often inadequate for addressing these evolving student needs. Limited career counselling personnel, inadequate support for students with disabilities and delayed feedback on academic activities reduce the effectiveness of student support services and may negatively influence students' academic achievement, employability and educational experiences. Although AI technologies offer promising solutions to these challenges, evidence concerning their adoption and perceived effectiveness within Nigerian public universities remains inadequate. Existing studies have focused primarily on instructional applications of AI, with relatively little attention devoted to its role in career guidance, accessibility and automated feedback systems. The absence of adequate empirical evidence limits institutional efforts to formulate policies and strategies for AI-enabled student support services. This study therefore sought to bridge this knowledge

gap by investigating stakeholders' perceptions regarding these AI applications in public universities in Rivers State.

Purpose of the Study

The purpose of this study was to examine artificial intelligence tools for enhancing inclusive, personalized and developmental student support services in public universities in Rivers State. Specifically, the study sought to:

1. Find out the extent to which AI-based career guidance systems enhance support services for students in public universities in Rivers State.
2. Assess the extent to which AI-powered accessibility tools enhance support services for students in public universities in Rivers State.
3. Investigate the extent to which AI-driven student feedback systems enhance support services for students in public universities in Rivers state.

Research Questions

The following research questions guided the study:

1. To what extent does AI-based career guidance systems enhance support services for students in public universities in Rivers State?
2. To what extent does AI-powered accessibility tools enhance support services for students in public universities in Rivers State?
3. To what extent does AI-driven student feedback systems enhance support services for students in public universities in Rivers State?

Hypotheses

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

1. There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-based career guidance systems enhance student support services in public universities in Rivers State.
2. There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-powered accessibility tools enhance student support services in public universities in Rivers State.
3. There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-driven student feedback systems enhance student support services in public universities in Rivers state.

Methodology

This study employed a descriptive survey research design with a population of 92,836 representing 92,570 students and 266 administrative staff from three Rivers State public universities. The Krejcie and Morgan sample size determination table was used to get the required sample size of 541 respondents who were selected using a multistage

sampling technique. Data were collected through the self-structured questionnaire i.e., ‘AI Tools for Inclusive, Personalised and Developmental Student Support Services in Public Universities Questionnaire’ based on four-point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE) weighted 4 to 1 respectively. A Validation of the instrument was done by three experts, one in Educational Management and 2 Measurement and Evaluation specialists all from Rivers state university. Cronbach’s alpha was used to establish the

instrument reliability, with coefficients of 0.80, 0.88 and 0.76 respectively Mean and standard deviation were analyzed for data analysis to question the research questions, z-test was used to test the null hypotheses at level of significance 0.05.

Results

Research Question 1: To what extent does AI-based career guidance systems enhance support services for students in public universities in Rivers State?

Table 1: Mean and Standard Deviation of Difference between Administrative Staff and Students Perceptions of AI-based Career Guidance Systems for Enhancing Student Support Services in Public Universities

S/No	Items	Students n =382		Admin. Staff n = 159		Remark
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1	AI-based career guidance systems help students identify career paths that align with their academic strengths and interests.	3.01	0.75	2.94	0.73	HE
2	AI-based career guidance systems provide students with up-to-date information on employment opportunities and labor market trends.	3.15	0.74	3.03	0.75	HE
3	AI-based career guidance systems assist students in making informed decisions about their academic programs and career choices.	3.07	0.68	2.93	0.63	HE
4	AI-based career guidance systems support students in developing relevant skills for their chosen career paths.	2.99	0.64	2.99	0.69	HE
5	AI-based career guidance systems enhance students’ access to career counseling and guidance services.	3.04	0.67	2.94	0.69	HE
6	AI-based career guidance systems help students prepare for employment through resume development, interview preparation or job matching.	3.25	0.56	3.07	0.62	HE
7	AI-based career guidance systems improve students’ confidence in planning for their future careers after graduation.	3.04	0.77	3.04	0.77	HE
	Grand Mean	3.08		2.99		HE

Source: Researcher’s Excel Data output (2026)

The findings in Table 1 revealed that students had a mean score of 3.08, administrative staff had a mean score of 2.99, both grand mean fall within the High Extent range. This implies that AI-powered career guidance systems are seen as crucial tools for navigating the future career paths of students, thereby enhancing support services.

Research Question 2: To what extent does AI-powered accessibility tools enhance support services for students in public universities in Rivers State?

Table 2: Mean and Standard Deviation of Difference between Administrative Staff and Students Perceptions of AI-powered Accessibility Tools for Enhancing Student Support Services in Public Universities

S/No	Items	Students n =382		Admin. Staff n = 159		Remark
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
8	AI-powered accessibility tools support students with disabilities in accessing learning materials and academic content.	2.99	0.71	3.01	0.71	HE
9	AI-powered accessibility tools enhance inclusive participation of students with special needs in academic activities.	3.07	0.72	2.94	0.74	HE
10	AI-powered accessibility tools improve students' ability to navigate university digital platforms and online resources.	3.13	0.64	2.97	0.67	HE
11	AI-powered accessibility tools provide alternative formats such as text-to-speech, speech-to-text or screen-reading support for students.	3.06	0.78	3.01	0.74	HE
12	AI-powered accessibility tools reduce barriers to academic and administrative support services for students with diverse needs.	3.17	0.74	3.00	0.78	HE
13	AI-powered accessibility tools enhance students' independence in completing academic tasks and accessing support services.	3.07	0.69	3.01	0.76	HE
14	AI-powered accessibility tools improve overall satisfaction with student support services among students in public universities.	2.95	0.66	3.03	0.70	HE
	Grand Mean	3.06		3.00		HE

Source: Researcher's Excel Data output (2026)

The results in Table 2 indicated that students had a mean score of 3.06, while administrative staff had a mean score of 3.00, the two mean scores lie within the High Extent range. This shows that AI-enhanced accessibility tools are perceived as fostering an equitable learning environment for students

with diverse needs, enhancing support services to a high extent.

Research Question 3: To what extent does AI-driven student feedback systems enhance support services for students in public universities in Rivers State?

Table 3: Mean and Standard Deviation of Difference between Administrative Staff and Students Perceptions of AI-driven Student Feedback Systems for Enhancing Student Support Services in Public Universities

S/No	Items	Students, n =382		Admin. Staff, n = 159		Remark
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
15	AI-driven feedback systems provide timely responses to students' academic and administrative inquiries.	2.92	0.67	3.14	0.77	HE
16	AI-driven feedback systems improve the responsiveness of student support services to students' concerns.	2.78	0.77	2.95	0.64	HE
17	AI-driven feedback systems help in early identification of students' academic challenges.	2.92	0.73	3.01	0.77	HE
18	AI-driven feedback systems improve students' access to academic support services.	2.89	0.64	3.14	0.74	HE
19	AI-driven feedback systems enhance support continuous monitoring of students' progress and performance.	3.06	0.69	2.95	0.70	HE
20	AI-driven feedback systems offer personalized feedback that meets individual students learning needs.	3.20	0.65	2.91	0.72	HE
21	AI-driven feedback systems improve students' satisfaction with support services in the university.	3.11	0.74	2.86	0.79	HE
	Grand Mean	2.98		2.99		HE

Source: Researcher's Excel Data output (2026)

The findings in Table 3 revealed that students had a mean score of 2.98, while administrative staff had a mean score of

2.99. The grand mean of the two respondents fall within the High Extent range, indicating that AI-driven feedback

systems are perceived as critical for providing timely and actionable academic feedback to enhance academic support services, especially with nearly identical perceptions from both groups and moderate variability responses.

Table 4: z-test Analysis on the Difference between Staff and Students' Perceptions on the Extent to which AI-based Career Guidance Systems enhance Support Services in Public Universities in Rivers State

Respondents	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>p</i>	<i>z-cal</i>	<i>z-crit</i>	Decision
Students	382	3.08	0.50	539	0.058	1.89	±1.96	Failed to reject
Staff	159	2.99	0.47					

Source: Researcher's Excel Data Output (2026)

The results on Table 4 showed Students with $M = 3.08$, $SD = 0.50$ and administrative staff with $M = 2.99$, $SD = 0.47$, $df = 539$, z -calculated value = 1.89 which is within the range of z -critical value of ± 1.96 . The results showed no significant difference in the perspectives of students and administrative personnel on the degree to which AI-based career advising systems can increase support services. Thus, the null

Hypothesis 1: There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-based career guidance systems enhance student support services in public universities in Rivers State.

hypothesis is not rejected, which means that students and staff have similar opinions about the possibilities of AI-based career advising systems to improve student support services.

Hypothesis 2: There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-powered accessibility tools enhance student support services in public universities in Rivers State.

Table 5: z-test Analysis on the Difference between Staff and Students' Perceptions on the Extent to which AI-powered Accessibility Tools enhance Support Services in Public Universities in Rivers State

Respondents	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>p</i>	<i>z-cal</i>	<i>z-crit</i>	Decision
Students	382	3.06	0.53	539	0.137	1.48	±1.96	Failed to reject
Staff	159	2.99	0.48					Not Significant

Source: Researcher's Excel Data Output (2026)

The results on Table 5 showed students with $M = 3.06$, $SD = 0.53$ and administrative personnel with $M = 2.99$, $SD = 0.48$, $df = 539$, estimated z -value of 1.48 is within the range of z -critical value of ± 1.96 . Thus, the results showed that there was no significant difference between the perceptions of the students and the administrative staff. Therefore, the null hypothesis is not rejected, suggesting that students and staff

have similar opinions regarding the potential of AI-powered accessible technologies to enhance student support services.

Hypothesis 3: There is no significant difference in the mean ratings of administrative staff and students on the extent to which AI-driven student feedback systems enhance support services for students in public universities in Rivers state.

Table 6: z-test Analysis on the Difference between Staff and Students' Perceptions on the Extent to which AI-driven Student Feedback enhance Support Services in Public Universities in Rivers State

Respondents	<i>N</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>p</i>	<i>z-cal</i>	<i>z-crit</i>	Decision
Students	382	2.98	0.38	539	0.784	-0.27	±1.96	Failed to reject
Staff	159	2.99	0.52					Not Significant

Source: Researcher's Excel Data Output (2026)

The results in Table 6 revealed that the students ($M = 2.98$, $SD = 0.38$) and the administrative staff ($M = 2.99$, $SD = 0.52$), $df = 539$, z -calculated value = -0.27 are within the range of ± 1.96 . Results found no significant differences in attitudes of students and administrative staff about the degree to which AI-driven feedback systems could improve support services. Therefore, the null hypothesis is not rejected, indicating that both students and staff share similar perspectives on the potential of AI-driven feedback systems to improve academic assistance services.

Discussion of Findings

The findings from research question 1 on Table 1 revealed students' and staff Mean which both fall within the high

extent range; thus, indicating that both students and administrative staff recognize the potential of AI-powered career guidance systems as effective tools for enhancing career-related support services to a high extent. This suggests that both groups perceive that adopting these systems could help students identify career paths aligned with their academic strengths and interests, while also providing access to up-to-date information on employment opportunities and labor market trends. In addition, it implies that these systems can enhance students' decision-making capacity by offering personalized recommendations, thereby improving their preparedness for the world of work. This finding corroborates Westman et al. (2021), who found that AI-powered career guidance systems deliver timely, personalized information

and recommend guidance sessions when necessary, thus improving service delivery. Similarly, Eze et al. (2025) reported that students using such platforms demonstrate greater confidence in making informed career decisions and exhibit higher levels of trust in AI-generated recommendations. The corresponding hypothesis 1 on Table 4 revealed a z-calculated value of 1.89 which lies within the z-critical value of ± 1.96 , therefore, the null hypothesis is not rejected, indicating no significant difference in perceptions, although the result is close to the rejection threshold. This suggests a slight tendency for students to value these systems more than staff, possibly due to their direct engagement with career planning tools. This aligns with Thomson et al. (2024), who emphasized the importance of AI in providing personalized career pathways, while also noting staff concerns regarding contextual relevance in dynamic labor markets. Furthermore, Westman et al. (2021) noted that while both students and staff perceive these systems as effective, staff emphasize the continued importance of human guidance alongside AI processes. The findings suggest the need for policies that support AI-driven career services integration within universities, ensuring alignment with national workforce development goals and labor market realities. AI-powered career guidance systems are highly valued for enhancing career support services, although their effectiveness can be further strengthened through a blended approach that combines AI insights with human expertise.

The findings from research question 2 on Table 2 revealed students' and staff Mean which both lie within the high extent range; thus, indicating that both students and administrative staff recognize the potential of AI-enhanced accessibility tools as effective means of enhancing academic and administrative support to a high extent. This suggests that both groups perceive that adopting these tools could significantly support students with diverse needs and disabilities by providing alternatives such as text-to-speech and screen-reading technologies, thereby promoting inclusivity and independence in academic activities. This finding aligns with Zhao et al. (2025), who found that generative AI functions as an effective assistive technology that enhances students' engagement in academic tasks. Similarly, Oyelere and Aruleba (2025), reported that AI tools positively impact students' academic experiences by improving accessibility and overall performance. Adeyanju et al. (2024) also found a statistically significant relationship between AI-powered library services and students' learning outcomes, despite limited availability of these tools. The corresponding hypothesis 2 on Table 5 revealed a z-calculated value of 1.48 which falls within the z-critical value of ± 1.96 therefore, the null hypothesis is not rejected, indicating no significant difference in perceptions. Jeilani and Abubakar (2025) supported this by noting that institutional support significantly influences technology adoption, particularly when students perceive clear benefits. The high

extent rating highlight the need for inclusive education policies that mandate the adoption of AI accessibility tools to support students with disabilities. Universities need to deploy tools such as speech-to-text, real-time transcription systems, ensuring that all students, regardless of ability, have equitable access to learning resources.

The findings from research question 3 on Table 3 revealed students' Mean and staff Mean which both fall within the high extent range; thus, indicating that both students and administrative staff recognize the potential of AI-driven feedback systems as efficient tools for providing immediate responses and enhancing student support to a high extent. This suggests that these systems are perceived to improve responsiveness and facilitate timely corrections of learning errors, thereby enhancing academic performance. This aligns with Ruwe and Kuklick (2026), who emphasized that automated feedback systems enable real-time correction of misconceptions. Similarly, Lo et al. (2026) found that while students value AI feedback for its efficiency and constructive tone, concerns remain regarding its generic nature. The corresponding hypothesis 3 on Table 6 revealed a z-calculated value of -0.274 which lies within the z-critical value of ± 1.96 , therefore the null hypothesis is not rejected. This indicates that both groups share similar perceptions regarding the usefulness of AI-driven feedback systems. These findings align with Zhang et al. (2025), who reported that students often rate AI-generated and human-AI collaborative feedback as more objective and useful than traditional methods. The findings from the present study implies the need for policies that integrate AI-based feedback systems into teaching and assessment processes, while ensuring standards for quality, fairness and transparency. While in practice the adoption of instant formative feedback by lecturers is essential, to improve student engagement and learning outcomes.

Conclusion

Based on the findings of the study, it was concluded that AI-powered career guidance systems, AI-enhanced accessibility tools and AI-driven feedback systems enhance student support services to a high extent. The findings indicate that these technologies can improve inclusive learning opportunities and provide timely academic feedback that supports students' academic development.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Government and university management should prioritize investment in AI-enhanced accessibility technologies to promote inclusive education and equitable support for students with disabilities and diverse learning needs.

2. University career service centres should integrate AI-powered career guidance platforms into career counselling programmes to improve students' career planning and employability.
3. Academic departments and lecturers should integrate AI-driven feedback systems into teaching and assessment processes to provide students with timely and constructive feedback.

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