

Effects of Information and Communication Technology (ICT) Literacy on Achieving Universal Basic Education (UBE) Goals in Government Junior Secondary Schools (GJSS) of Bauchi Metropolis, Bauchi state

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ABSTRACT

The study examines the impact of ICT literacy on achieving Universal Basic Education (UBE) goals in Government Junior Secondary Schools in Bauchi metropolis, Bauchi State, Nigeria. Using an ex-post facto research design, the researchers assessed the relationship between ICT literacy (independent variable) and UBE goals (dependent variable) among students. The sample size was determined using Krejcie and Morgan's statistical tables, and data were collected through a checklist and a structured questionnaire (PNEICTUBEG), which was validated and pilot-tested. The reliability coefficient was 0.85. Data analysis was performed using SPSS, with research questions addressed through mean and standard deviation, and hypotheses tested via simple regression at a 0.05 significance level. The results indicated that necessary ICT resources, such as hardware, software, typing skills, and online access, were available in the schools. The first null hypothesis revealed that ICT literacy positively and significantly influenced UBE goals. Conversely, the second hypothesis showed that negative impacts of ICT literacy did not significantly affect UBE goals. The study recommended that the state government enhance ICT resources in secondary schools and ensure these resources are accessible to teachers to improve teaching and learning, thereby supporting UBE goal achievement.

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INTRODUCTION

Education is an important vehicle for achieving national development and social goals. Through education, Nigeria seeks to achieve the formation of modern, social and economic, a free and democratic society which is just and egalitarian (Awanbor, 1995). The rapid growth in Information and Communication Technology (ICT) has brought remarkable changes in the 21st century. ICT is becoming increasingly important affecting the daily lives of the people and the educational system. Therefore, this makes it a growing demand on educational institutions to use ICT in teaching, learning and skills, because of realizing the effect of ICT on the workplace and

everyday life, the educational institutions have to restructure their educational curricular and classroom facilities to bridge the existing technology gap in teaching and learning.

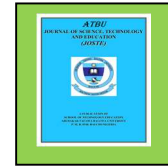
This restructuring process requires effective adoption of technologies into the existing environment to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity (Charles, 2012). ICT stands for Information and Communication technology. Onasanya, (2020) describe it as an aggregate of all forms of technological tools that can be used in transmitting, disseminating or communicating, storing and managing of information. Information

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and communication technology (ICT) is a pivot for the existence of a global world in terms of social, economic, political, and educational development of any nation and allows for advancement of any country (Onasanya, Fakomogbon, Shehu and Soetan, 2020).

However, the adoption of ICT requires an environment that encourages open competition and normalization, increase access to the internet and telecommunications infrastructure, increase ICT literacy and financial resources (Bello, and Aderbigbe, 2014). Nworgu (2018) stated that ICT refers to a whole range of facilities or technologies involved in information processing and electronic communication to be handled with skills and expertise, for effective achievement and realization of its potentials in Education. In the view of the above, Valasidou (2008) states that ICT is an innovative instrumental tool that enables the educators to modify the teaching and learning processes in order to increase students' interest. Literacy is seen as a technique for proficiency in reading, writing and using numbers throughout life and is part of a larger set of skills, which include digital skills, media literacy, education for sustainable development as well as job-specific skills. UNESCO, (2023) Literacy skills themselves are expanding and evolving as people engage more and more with information and learning through digital environment.

UNESCO, (2023) further described digital literacy as the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes skills such as computer literacy, ICT literacy, information literacy and media literacy which aim to empower people, and in particular youth, to adopt a critical mindset when engaging with information and digital technologies, and to build their resilience in the face of disinformation, hate speech and violent extremism UNESCO, (2023). ICT has brought into the system new and emerging technologies that have come to replace or challenge the traditional methods involved in the teaching and learning process Ibrahim, A. and Ayorinde, M. O. (2020).

Also, there is need therefore for proper integration of ICT in instructional delivery for purposeful and experimental learning to take place. This involves being able to seek out and use information stored in computers and other electronic materials to be up-to-date. The 21st century currently coiled everything into ICT in which education is inclusive for which the use of ICT has made teaching and learning process very impressive Ibrahim, A. and Ayorinde, M. O. (2020). More so, the researcher went on interaction within Bauchi metropolis of the state and observed that there is an argument among the stakeholders in education on the availability of ICT literacy for achieving the goals of UBE in the state. Some few individuals argued that the government furnished the schools with available ICT literacy others stressed that, there was no available functional ICT facilities in the schools. On this note, the available ICT facilities was either not functional, accessible or not properly utilized by teachers.

In the same vein, some previously conducted research works on the availability and accessibility on the use of ICT facilities in Nigerian secondary schools affirmed this statement (Muhammad, Hamza and Suleiman 2014). It is based on these therefore, the researcher conducted this research to assess the effect of positive and negative impact of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis, Bauchi State Nigeria.

LITERATURE REVIEW

Concept of Basic Education

The first attempt to address the lingering educational problems in Nigeria was the creation of Universal Primary Education (UPE) program in 1976 (Bruns & Rakotomalala, 2003). But by the late 1970s, the UPE program was generally considered to have failed. This led to various education reforms, and in 1999 the Universal Basic Education (UBE) was introduced to address these educational crises in Nigeria. The UBE program started in 2004, with an overarching goal and objectives that include; the providing "free, universal and compulsory basic education for every Nigerian child aged 6-15 years" FGN (2009).

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Education is an established instrument in bringing about development in any society. UNICEF (2016) described it as a basic human right which is vital for personal and societal development, and all children deserve qualitative education founded on a rightful-based approach and rooted in the concept of gender equality. According to Aluede, (2000) Bala, U. and Murtala, A. (2021) Stated that basic education refers to the type of education that is reached in quality, quantity and content which is given in the first level of education.

However, Monyei (2019) emphasize that basic education is the minimum knowledge and skills required to lives as an independent individual who is not a burden to his society. He stressed that primary education and junior secondary education was fashioned to provide basic education on which to build future education training. Bala, U, and Murtala, A. (2021) Quoting JONATEIN Declaration and framework of action on education for all, state that the Federal Ministry of Education, Federal Republic of Nigeria (FRN, 2004) recommended that Basic Education shall be of 9 years' duration comprising 6 years of Primary Education and 3 years of Junior Secondary Education; it shall also include adult and Non-Formal Education programs at primary and junior secondary education levels for the adults and out of school youths.

In the same vein, the compulsory, free, universal basic education act (2004) defines

universal basic education as early childhood care and education, the nine years of formal schooling, adult literacy and non-formal education, skills acquisition programs and the education of special groups such as nomads and migrants, girls' child and women, almajiri and disabled groups.

Effects of ICT

As human being we are always connected with lot of essential things in our everyday life. The use of ICT gadgets in our lifestyle has become more imperative and as such taught tasks has becomes easier and social contacts has been increased (Marcio, R. 2013). ICT has affected lives by improving timely distribution of information through the media and improved communications in homes and work places through social networks as instant messages platforms, emails, etc. (Adebisi, A. A. 2012).

Blogpress, B. (2012) emphasizes that ICT has extremely enhanced the quality of human life. For examples, writing a letter could take few days to arrive to the receiver but by writing an e-mail, instant messages platforms will reach the intended receiver in just a seconds. ICT provides each facility on 24Hrs/7days with the wider knowledge and information. ICT affects various fields of daily life some of them are described below in the diagram:



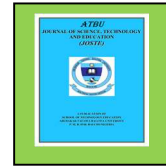
Figure 1: Effects of ICT

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Objectives of the Study

The main objective of the study is to examine the effects of ICT literacy on achieving the goals of UBE in GJSS in Bauchi metropolises.

The specific objectives of the study are to:

- I. determine the positive effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State;
- II. determine the negative effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

Research Questions

Based on the specific objectives of the study, the following questions were raised for the study.

- I. What are the positive effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State?
- II. What are the negative effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State?

Research Hypotheses

The following null hypotheses were postulated to guide the study:

- H₁: positive effects of ICT literacy had no significant impact on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.
- H₂: negative effects of ICT literacy had no significant impact on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

METHODOLOGY

The study adopted ex-post facto research design. Ex-post facto means "after the fact" in literal terms. Zainab, S. and Devin, k. (2023) Define ex-post facto design attempt to determine a cause-and-effect relationship between an independent and dependent variable. The independent variable, however, cannot be manipulated or altered in which ex-post factor studies will look at how a particular characteristic,

trait, or past occurrence affects the dependent variable Zainab, S. and Devin, k. (2023). The design was chosen to allow the researcher to have the previous records of student's common entrance examination for the transition to JSS I, to get an insight about feelings, opinions, perception, awareness and appreciation in the use of ICT literacy in teaching and learning in primary schools in Bauchi metropolis, Bauchi State.

The population of the study was chosen at random that comprised the entire 17758 students of a selected one ward from the eight (8) wards of public JSS within the eight (8) wards to represent the entire population in Bauchi metropolis of Bauchi LGA Bauchi state. Krejcie and Morgan (1970) statistics tables was used to select the sample size of the study. Base on this technique the sample size for the study stood at 377 which forms the range between the total number of population for the entire study area and the decision rule from the krejcie and Morgan (1970) table after totaling the entire population of the study area. The instrument for data collection was a checklist adapted from Stephen (2013), and a structured questionnaire titled "Positive and Negative effect of Information and Communication Technology Literacy for achieving UBE goals Questionnaire (PNEICTUBEG)".

The checklist had ten (10) items each to determine the positive and negative impact of ICT literacy. The checklist structured as Readily Available (RA), Fairly Available (FA) and Not Available (NA). The questionnaire was vetted by experts in ICT and experts in educational research and pilot tested in Senior Secondary Schools in Darazo Local Government Area (LGA) and Ningi LGA of Bauchi state because of their common characteristics with the respondents in the study area. Standardized Cronbach alpha reliability coefficient of 0.85 was obtained and used. Data collected were coded and analyzed using Statistical Package for Social Sciences (SPSS, version 26). The two (2) research questions were answered using mean and standard deviation, while all the null hypotheses were tested using simple regression analysis at 0.05 level of significance.

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RESULT OF THE STUDY

The study is to examined the effects of ICT literacy on achieving the goals of UBE in GJSS in Bauchi metropolis.

Research Question: What are the positive effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State?

Table 1: Mean and standard deviations on the positive effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

S/No.	Checklist Items	N	MEAN	STD	DECISION
1	There is available computer hardware in our School	355	3.35	1.83	Readily Available
2	ICT help us to develop typing skills	355	3.30	1.81	Readily Available
3	ICT help us to access information online	355	3.12	1.77	Readily Available
4	ICT help us to communicate with other class members	355	3.87	1.94	Readily Available
5	I use to access the internet for browsing available in my school	355	2.4	1.55	Not Available
6	I use to access smart board available in my School	355	2.30	1.52	Not Available
7	I use to access projector available in my school	355	2.65	1.62	Available
8	I use to access digital camera available in my School	355	2.56	1.60	Available
9	I use to access scanning machine available in my school	355	2.41	1.55	Not Available
10	There are available LAN services in my School	355	2.11	1.45	Not Available
Cumulative Mean			2.81	1.68	

Table 1 result of the study showed that questionnaire item 1-4 revealed that computer items for achieving the aims of universal basic education is readily available in the study area such as computer hardware in schools, using ICT to developed typing skills to students, help students to access information online and students were able to communicate with their peers in the school through ICT gadgets. Communication using ICT between the students had the highest mean score of 3.87 and standard deviation of 1.94. followed by computer hardware with mean score of 3.35 and standard deviation of 1.83, while the questionnaire item 5 and 6 are adequately not available for an access to internet for browsing and the availability of smart board for

teaching in schools with a mean score of 2.4, 2.30 and standard deviation of 1.55, 1.52 respectively.

Also, questionnaire item 7 and 8 which showed that projector and digital camera are relatively available but not adequate with a mean score of 2.65 and 2.56 with mean score of 1.62 and 1.60. However, it observed that the results revealed that most of the ICT literacy was readily not available with an aggregate mean of 2.81 which is less than the benchmark of 3.00. This implies that the positive effects of ICT literacy on achieving the goals of UBE positively affect the performance of students in GJSS of Bauchi metropolis Bauchi State.

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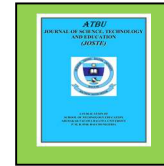


Table 2: Mean and standard deviations on the negative effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

S/NO.	CHECKLIST ITEMS	N	MEAN	STD	DECISION
1	ICT distract classroom use and attention	355	2.68	1.64	Available
2	ICT distract students from social interaction	355	2.88	1.70	Available
3	ICT usage promote cheating to students in class	355	3.65	1.91	Readily Available
4	ICT promote consumption of false information	355	3.10	1.76	Readily Available
5	ICT promote theft of personal data by students	355	2.98	1.73	Readily Available
6	ICT promote low-self esteem	355	3.98	1.99	Readily Available
7	ICT leads to health issues related	355	3.77	1.94	Readily Available
8	Increased risk and lack of privacy to students	355	3.25	1.80	Readily Available
9	ICT leads to cyberbullying	355	2.50	1.58	Available
10	ICT leads to technology addiction	355	3.63	1.91	Readily Available
Cumulative Mean			32.42	3.24	

Table 2 of the study showed that means and standard deviations of negative effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State. The analysis indicated that questionnaire item 2 and 3 (ICT distract students from social interaction and ICT usage promote cheating to students in class) had the mean score of 2.88, 3.65 with a standard deviation of 1.70 and 1.91 respectively, while questionnaire item 6 and (ICT promote low-self-esteem, and ICT leads to health issues related) received higher response which indicated that ICT promote low-self-esteem and mostly lead them to health issues related problems due to excessive use of the technology driven gadget. However, it

was observed that ICT leads to technology addiction to many students with an aggregate mean of 3.63 and standard deviation of 1.91 which is more than the benchmark of 2.50. This implies that ICT literacy affect the performance of students and here by hinder the achieving of UBE goals in the study area.

Null Hypothesis One

Availability of ICT literacy had no significant positive effects on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

Table 3: Regression Analysis on positive effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

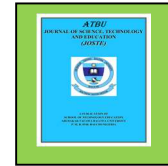
Variable	β	PE	T	R ²	Adj. R	SIG.
Constant	3.78	0.47	8.14	0.79	0.79	0.000
Positive effect of ICT Literacy	0.51	0.09	7.13	0.41	0.47	0.001

P < 0.05

The regression analysis in table 3 presents the positive effects of ICT literacy on

achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State. The results revealed that

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the coefficient of determination (R^2) which shows the total contribution of the independent variable to the dependent was 0.79 or 79%. The coefficient of the independent variable (positive effect of ICT literacy) was 0.510 indicating that one-unit increase in the positive effect of ICT literacy will increase students' performance in achieving the goals of UBE in Bauchi metropolis by 51%. The result further indicated that the calculated p-value of 0.001 was less than the a priori alpha-value (α) of 0.05 level of significance ($P= 0.001 < \alpha = 0.05$).

Hence, the null hypothesis that says the positive effect of ICT literacy has no significant effects on achieving the goals of UBE in Bauchi metropolis and was therefore, rejected.

Null Hypothesis Two: Negative effects of ICT literacy has no significant impact on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State.

Table 4: Regression Analysis on the negative effects of ICT literacy on achieving the goals of UBE in Bauchi metropolis Bauchi state.

Variable	β	NE	T	R^2	Adj. R	SIG.
Constant	1.65	0.67	2.41	0.65	0.64	0.000
Negative effect of ICT Literacy	0.27	0.19	1.92	0.41	0.39	0.001

P < 0.05

The regression analysis in table 4 presents the negative effects of ICT literacy on achieving the goals of UBE in Bauchi metropolis, Bauchi State. The results revealed that the coefficient of determination (R^2) which shows the total contribution of the independent variable to the dependent was 0.41 or 49%. The coefficient of the independent variable (negative effect of ICT literacy) was 0.27 indicating that one-unit increase in the negative effect of ICT literacy will increase students' performance in achieving the goals of UBE by 27%. The result further indicated that the calculated p-value of 0.001 was less than the a priori alpha-value (α) of 0.05 level of significance ($P= 0.001 < \alpha = 0.05$). Hence, the null hypothesis that says the negative effect of ICT literacy has no significant effects on achieving the goals of UBE in Bauchi metropolis and was therefore, rejected.

Johnson & Smith, (2019); Chen & Wang, (2024). That social media is utilized to promote formal learning experiences, improve communication, and boost collaboration. It also streamlined administrative procedures, reducing manual work and increasing efficiency in student registration, course management, data analysis, and record-keeping (Smith, 2017). Tools like video conferencing, instant messaging services, and shared online workspaces enable effective teamwork and information sharing (Lee, & Chen, 2023).

The findings from null hypothesis one revealed that positive effect of ICT literacy had significant impacts on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi state. Similarly, Fekeye (2010) also investigated the English language teachers' knowledge and use of ICT in Ibadan Southwest LGA of Oyo State and found that availability of computers and their connections to the internet was virtually help in achieving the goals of sustainable development goals SDGs in all the schools studied. Also, Wisdom and Terumber (2012) revealed that ICT resources were also available in COE Katsina-Ala for teacher education instructional development. The study further analyzed the negative effects of ICT literacy on achieving the goals of UBE in GJSS of Bauchi metropolis Bauchi State. The

DISCUSSION OF FINDINGS

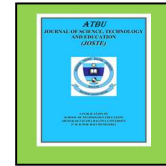
The study showed that the ICT items for achieving the aims of universal basic education is readily available in the study area such as computer hardware in schools, using ICT to developed typing skills to students, help students to access information online and students were able to communicate with their peers in the school through ICT gadgets. This finding is in line with

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analysis indicated that questionnaire item 2 and 3 (ICT distract students from social interaction and ICT usage promote cheating to students in class) had the mean score of 2.88, 3.65 with a standard deviation of 1.70 and 1.91 respectively, while questionnaire item 6 and (ICT promote low-self esteem, and ICT leads to health issues related) received higher response which indicated that ICT promote low-self-esteem and mostly lead them to health issues related problems due to excessive use of the technology driven gadget.

Adeyeye, Oke and Tijina (2003) who find out that, very low availability of ICT resources in his sampled schools although 80% of the respondents both teachers and students indicated their willingness to be trained for ICT usage. Also, Atsumbe, Raymond, Enoch and Duhu (2012) revealed that e-learning infrastructure was not available for teaching and learning and ICT tools available in the university were mainly used for administrative purposes. Also, the same with that of Zubairu (2014) who revealed that ICT resources are not available in Federal Colleges of Education in Nigeria. Mohammed, H. and Sulaiman, N. (2014) revealed that the public schools did not have enough computers and respondents agreed that ICT has an effect on school operations among others. In line with this finding, Akingbade, (2013) found that computers were available in most schools.

The findings also showed that there is no significant difference in the availability of ICT facilities in public and private junior secondary schools and that students in private schools are more exposed to ICT than their counterparts in public schools. Also, Akindele (2013) who found that about 90%, 92%, 96% of ICT facilities were found readily available in public junior secondary schools in the south-west, Nigeria, but personal observation revealed that these facilities were scanty and not maximally utilized. The same with the findings of Ugwoke, Onu, Agangan and Ugwuanyi (2015) who found that there was availability of ICT facilities such as laboratories and others in junior secondary schools in Nsukka education zone.

The findings from null hypothesis two revealed that negative effects of ICT literacy had

no significant impacts on achieving the goals of Universal Basic Education UBE in junior secondary schools in Bauchi metropolis. The findings of Wisdom and Terumber (2012) found that teacher educators in COE Katsina-Ala could not access ICT resources for instructional development purposes. This finding is the same as Idris, M. K., Jibrin, A. G., and Ibrahim, M. (2017) found that the e-learning facilities could not be a yardstick for measuring students' performance and achieving the goals of Universal Basic Education UBE, Sustainable Development Goals SDG in primary and junior secondary schools in Darazo local government area (LGA) Bauchi state. Also, the findings is in agreement with the finding of Idris, M. K., Jibrin, A. G., and Ibrahim, M. (2017) Which revealed that, teachers agreed that, access to ICT infrastructure is one of the effective means to integrate ICT skills and literacy in classrooms.

In the same vein, Marcio, R (2022) Found that majority of the teachers had no access to a computer and the internet at their schools. He further stressed that 76% of the teachers had no access to the internet at their schools and this does not hinder students' literacy but only affect their ICT knowledge concept.

The findings are also in line with that of Idris, M. K., Jibrin, A. G., and Ibrahim, M. (2017) who opined that 78.6% of the teachers in Darazo Local Government Area LGA had access to ICT training centres that offered short term courses in ICT Literacy as part of technical teacher training program by Darazo Local Education Authority (LEA) during the school recess. However, Kenya SCHOOLNET (2003) found that the level of access to locally relevant content by the teachers was high as 82.4% said they had access to local web-based training programmes. From the findings, the ICT literacy on achieving the goals of universal Basic Education (UBE) in Junior secondary schools in Bauchi metropolis does not affected the academic performance of students in Bauchi metropolis.

CONCLUSION

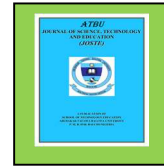
The attempts were made to identify the general philosophy of UBE programme and its

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importance to education sector especially at the junior secondary schools and some impediments encountered in universalizing education in Nigeria. The concepts of ICT were discussed and the relevance of ICT in the implementation of UBE program was analyzed. The importance of solid foundation in education such as the UBE cannot be overemphasized. This is because it is at this level that the foundations for secondary and tertiary education are laid. A thorough knowledge of how education is imparted at this level particularly with the use of ICT in education with its intending positive and negative consequences which serves as a facilitator has become imperative. The study found that ICT utilization in Junior Secondary Schools in the study area does not much affected the students' progress in their education.

RECOMMENDATIONS

Based on the outcome of the study, the following recommendations were made.

1. The Bauchi state government should provide available ICT equipment through the ministry of education in all the state-owned secondary schools.
2. The UBEC and ETF should work out a comprehensive plan for the provision of the necessary ICT infrastructure for achieving the goals Universal Basic Education UBE in the primary and junior secondary schools.
3. The researchers recommend that the ICT equipment if provided should be made accessible to teachers to generate more effective teaching and learning in junior secondary schools in Bauchi State.

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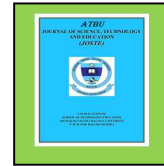
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