Studies into learning styles for the past three decades have brought about an increasing attention and awareness to the diverse ways through which students prefer to learn. Researchers in education indicate that individuals have different learning styles which are influenced by different factors. This study investigated the factors influencing learning style preferences of students in public Colleges of Education (CoEs) in the Central-Western Zone of Ghana. The study adopted quantitative approach of the cross-sectional survey design. Through random sampling, 1396 respondents were used for the study. The adapted instrument used for the study was pre-tested and its analysis yielded a Cronbach Alpha Co-efficient of 0.87 which was deemed appropriate. The students agreed that instructional factors influenced their learning style preferences but disagreed that their learning style preferences were influenced by personal factors, and environmental factors. There were statistically significant differences in the perception of students on factors that influence their learning style preferences based on sex (male or female), level (Level 100 or Level 200), and nature of College (single-sex or co educational). It was concluded that students' learning style preferences are affected by different factors which in turn affect their study habits. As such, it was recommended among others that tutors of public CoEs in the Central-Western Zone of Ghana should regularly provide an enabling classroom environment and adopt appropriate and varied teaching methods, techniques and strategies to enhance students' learning style preferences. Keywords: Learning style, preference, environmental, personal, instructional, factors