Personality Based Tailored Learning Paths Using Cluster Analysis Methods: Increasing Students' Satisfaction in Online Courses

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Abstract : Online courses have become common in many learning programs and various learning environments, particularly in higher education. Social distancing forced in response to the COVID-19 pandemic has increased the demand for these courses. Yet, despite the frequency of use, online learning is not free of limitations and may not suit all learners. Hence, the growth of online learning alongside with learners' diversity raises the question: is online learning, as it currently offered, meets the needs of each learner? Fortunately, today's technology allows to produce tailored learning platforms, namely, personalization. Personality influences learner's satisfaction and therefore has a significant impact on learning effectiveness. A better understanding of personality can lead to a greater appreciation of learning needs, as well to assists educators ensure that an optimal learning environment is provided. In the context of online learning and personality, the research on learning design according to personality traits is lacking. This study explores the relations between personality traits (using the 'Big-five' model) and students' satisfaction with five techno-pedagogical learning solutions (TPLS): discussion groups, digital books, online assignments, surveys/polls, and media, in order to provide an online learning process to students' satisfaction. Satisfaction level and personality identification of 108 students who participated in a fully online learning course at a large, accredited university were measured. Cluster analysis methods (k-mean) were applied to identify learners' clusters according to their personality traits. Correlation analysis was performed to examine the relations between the obtained clusters and satisfaction with the offered TPLS. Findings suggest that learners associated with the 'Neurotic' cluster showed low satisfaction with all TPLS compared to learners associated with the 'Non-neurotics' cluster. learners associated with the 'Consciences' cluster were satisfied with all TPLS except discussion groups, and those in the 'Open-Extroverts' cluster were satisfied with assignments and media. All clusters except 'Neurotic' were highly satisfied with the online course in general. According to the findings, dividing learners into four clusters based on personality traits may help define tailor learning paths for them, combining various TPLS to increase their satisfaction. As personality has a set of traits, several TPLS may be offered in each learning path. For the neurotics, however, an extended selection may suit more, or alternatively offering them the TPLS they less dislike. Study findings clearly indicate that personality plays a significant role in a learner's satisfaction level. Consequently, personality traits should be considered when designing personalized learning activities. The current research seeks to bridge the theoretical gap in this specific research area. Establishing the assumption that different personalities need different learning solutions may contribute towards a better design of online courses, leaving no learner behind, whether he\she likes online learning or not, since different personalities need different learning solutions.

Keywords : online learning, personality traits, personalization, techno-pedagogical learning solutions