Fayoum University
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Two Designs of Intelligent Support Based on Learning Analytics in A Collaborative Learning Environment and their Effectiveness in Developing Achievement Motivation and Digital Empowerment Skills

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Abstract

The current research aimed at designing intelligent support (Intelligent Agent and Adaptive Group Formation) based on learning analytics of a collaborative learning environment, and to investigate their effectiveness in developing achievement motivation and digital empowerment skills among students in the "Virtual Environments" course, 4th year, Digital Educational Technology Program at the Center for Blended Learning, Fayoum University. To achieve this goal, the developmental research method as defined by Elgazzar (2014) was adopted, which integrates three sequential research methods: the descriptive research method, the systems developmental method, and the experimental method. Then Digital Empowerment Skills were determined, a list of design standards for a collaborative learning environment integrating the two intelligent support models was developed, the collaborative learning environment was developed based on the two intelligent support designs using Elgazzar (2014) instructional design model, The research tools that included: A cognitive achievement test on the virtual environments course, An Achievement Motivation Scale, A Digital Empowerment Skills Scale, and A Product Evaluation checklist were prepared and validated. The research sample consisted of (68) students, randomly divided and assigned to two experimental groups: Experimental Group 1 (n = 36): students who received intelligent support via the *Intelligent Agent design*, and Experimental Group 2 (n = 32): students who received intelligent support via the *Adaptive Group Formation design* in an Extended Experimental group design with pre- and post- test. The research experiment was implemented and the research tools were applied and data collected.

Data were analyzed using SPSS software to answer the research questions and test the hypotheses. Research findings confirmed the effectiveness of both intelligent support designs (Intelligent Agent and Adaptive Group Formation) based on learning analytics in developing students' cognitive achievement in the virtual environments course, their achievement motivation, and their digital empowerment skills. The results also revealed improved practical skills as measured by the product evaluation checklist. Moreover, no statistically significant differences were found between the two intelligent support designs in the post-application of the achievement test, achievement motivation scale, digital empowerment skills scale, and product evaluation checklist. The results were interpreted. The dissertation report included a number of recommendations and proposed research, and a list of references, and appendices.

***Keywords**:* Intelligent Support Design – Intelligent Agent – Adaptive Group Formation – Learning Analytics – Collaborative Learning Environment – Elgazzar (2014) ISD model - Achievement Motivation – Digital Empowerment Skills