

Assessing Dynamic Aspects of Learner Motivation in Simulation/Gaming Based Foreign Language Learning Environment

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Abstract: The purpose of this paper is to report results of a pilot study which assessed dynamic aspects of learner motivation using self-report instruments in a simulation/gaming-based Arabic learning environment – Tactical Language Training System (TLTS). The results indicate that learners with positive attitude and interest in learning a second language performed well. The results also imply that the interactivity and entertaining elements of simulation/gaming could help learners develop personal interest in learning even the most difficult language in the world.

Introduction

This paper reports on a pilot assessment of dynamic aspects of learner motivation using self-report instruments in a simulation/gaming-based Arabic learning environment – the Tactical Language Training System (TLTS). The paper focuses on the interactions among various motivational variables and its implication for learner performance.

The Tactical Language Training System (TLTS) is a simulation/gaming-based foreign language learning environment which aims to help learners rapidly acquire mission-oriented communicative competence in spoken Arabic language [11]. In the TLTS, an intelligent agent tutors learners through lessons, assesses learner progress and provides tailored feedback and pedagogical assistance using learner modeling and speech recognition technology (Skill Builder) [12]. Learners then practice their target language skills in an interactive, task-oriented social simulation in which they speak and use culturally appropriate gestures with autonomous, animated characters (Mission Practice Environment).

1. Overview of the Study

Six participants were recruited from the 4th Psychological Operations Group at Fort Bragg. Only one participant (Subject 002) had prior training in Arabic. All participants interacted with the system for four days including testing, and they had complete control over what to study and how much time to spend on different lessons and different components of the system. At the end of each day learners were asked to report their interest levels and the amount of mental effort they spent to process the learning material. Field observation notes were also taken to record learners' behaviors and comments. After the training, participants

were also required to take the post test which consisted of a vocabulary test, an Arabic understanding test, and an Arabic speaking test, graded on a four-point scale.

The study also used questionnaires to assess learners' personal interests and traits related to L2 learning motivation. Using a survey questionnaire, learner perception data were collected to gain the information about the usefulness, helpfulness, and interestingness of the system. Along with the learner perception survey questionnaire, Gardner's Attitude/Motivation Test Battery [7] was adopted before and after learners' interaction with the system to measure learners' initial L2 motivation and attitudes toward Arabic language, and possible changes after using the system. Combining the results from these multiple measures, it was expected to be possible to answer the question "whether the psychological state of interest experienced as the result of situational factors is the same or even comparable to the psychological state that is the outcome of individual factors" [2] (p. 48).

2. Results and Discussion

There were a total of ten lessons in the Skill Builder, each of which deals with different discourse functions and cultural topics. Learners' achievements are higher with the first four lessons ($M = 2.47$) than with all lessons put together ($M = 2.05$). The low performance could be attributed to the fact that learners experienced technical problems on Day 2 when most learners were focusing on the advanced lessons. Notable is the Subject 003's performance. He outperformed all other learners except Subject 002 who learned Arabic language before. There should be a lot of factors, both cognitive and affective ones, involved in the Subject 003's performance. The system's instructional benefits were also evidenced by the Subject 001's remarks. He said that Arabic is a category 4 language (the most difficult one) and it takes 18 months to achieve intermediate proficiency. He initially thought that expecting soldiers to learn some Arabic in such a short time (4 days) was not realistic, but he was surprised and excited that he was able to retain what he has learned with the TLTS (although he retained less than the other subjects).

To measure more stable characteristics of learner interest and motivation, five questionnaires were used to identify 'Interest in L2', 'Attitude toward Learning L2', 'Integrative Orientation', 'Instrumental Orientation', 'L2 Anxiety' before the training, and 'Attitude toward Arabic Language', 'Motivational Intensity' after the training. These measures have been used by Second Language Acquisition (SLA) researchers for more than 20 years, and their validity and reliability have been empirically attested [7]. Spearman's Rank-Order Correlation Coefficient, a nonparametric data analysis, was conducted at a 0.05 significance level in order to examine relationships among trait variables and L2 performance variables.

For pre-treatment motivational variables, statistically significant correlations were found between interest in L2 and integrative orientation ($r = 0.941, p = 0.005$), interest in L2 and instrumental orientation ($r = 0.824, p = 0.044$), integrative orientation and instrumental orientation ($r = 0.941, p = 0.005$), attitude toward L2 and basic level performance ($r = 0.928, p = 0.008$), and attitude toward L2 and overall performance ($r = 0.812, p = 0.050$). There is a negative relationship between L2 anxiety and performance although the correlation coefficient between was not statistically significant ($r = -0.174, p = 0.742$). It can be inferred from these results that when learners have negative attitudes or low interest in learning L2, they do not perform well. Therefore, learners with low interest and motivation might need more emotional assistance such as encouragement and positive in-time feedback to compensate their lack of their interest in the task [3].

For post-treatment motivational variables, 'Motivational intensity', learners' future plans or intention to learn or use Arabic was highly correlated with both basic level ($r =$

0.986, $p = 0.000$) and overall performance ($r = 0.899$, $p = 0.015$). However, no significant correlation was found between attitude toward Arabic Language and performance, which is interesting because the opposite was observed between attitude toward L2 (not a specific language) and performance. It might be the case that learners' perception of Arabic Language as a most difficult language is deeply rooted in their minds, but the TLTS somewhat convinced learners to want to learn the language in the future even though they still believe learning Arabic is not too much fun or easy. The results also imply that the interactivity and entertaining elements of simulation/gaming could help learners develop personal interest in learning even the most difficult language in the world.

Learners' situational interest and state motivation were measured at the end of every day by asking participants to self-report in a questionnaire (6-point Likert scale). The situational interest measure included questions asking the interestingness, usefulness, and helpfulness of the system. 4 questions related to mental effort were also included. Mental effort is one of the behavioral indexes of motivation [13], and it is assumed that the higher the interest, the more mental effort is exerted by the learner.

Overall, learners perceived the system very positively. What is also interesting about these data is that Subject 006 consistently displayed lower levels of situational motivation/interest compared to other learners. The subject scored highest in the L2 anxiety measure, and his high anxiety might have affected his perceptions of learning Arabic negatively. He also performed low in the posttest. Diagnosing these types of learner characteristics ahead could help implement pedagogic strategies that accommodate individual differences affecting learner performance.

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