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**Does the Capacity of Identifying the Student Emotion Expand the Potentialities
for e-Learning?**

George LĂZĂROIU

Center for Behavioral Decision Research at AAER
30-18 50th Street, Woodside, New York, NY, United States of America
phd_lazaroiu@yahoo.com

Gheorghe H. POPESCU

Dimitrie Cantemir Christian University, Splaiul Unirii 176, Bucharest, Romania
popescu_ucdc@yahoo.com

Ionel MOHÎRȚĂ

Danubius University, Galați Bvd. 10, Galați, Romania
mohirta@tanatopsihologie.ro

Raluca BALICA

University of Craiova, Alexandru Ioan Cuza St. 13, Craiova, Romania
ralu.balica@yahoo.com

Gheorghe COJOCARIU

Spiru Haret University, Ion Ghica St. 13, Bucharest, Romania
jur.gheorghe.cojocariu@spiruharet.ro

Abstract: *A booming stream of research (e.g. Ortigosa et al., 2014) insists that the utilization of computers in education has been instrumental for learners and teachers. The particular information to be gathered requires the objectives of the adaptive e-learning system. In learning frameworks, being able to identify and handle information concerning the students' emotions at a particular moment may be essential in grasping their possible demands at that time. What makes our research novel is that we investigate the way adaptive e-learning settings may utilize such information to accomplish those requirements at runtime, supplying the user with instructions about undertakings to deal with or subject matter to network with, adjusted to student's emotional state. Information regarding the student emotions with regard to a course may serve as reply for the teacher. Our paper builds upon and advances existing research clarifying that, in online courses, there may be almost no direct interaction between learners and teachers and thus less feedback. Adaptive Hypermedia (AH) can be employed in the circumstances of e-learning to reinforce personalized learning, by advancing the most satisfactory assignment to be carried out by each learner systematically, in addition to the most relevant multimedia constituents to be displayed to each of the students, in relation to personal characteristics, choices, prior undertakings, framework, etc. CoMoLE (Context-based adaptive Mobile Learning Environments) is an adaptive e-learning system instrumental in grasping the user sentiment, bolstering the configuration and changing generation of e-learning settings able to (i) suggest separate or shared undertakings to be accomplished by each learner or group in consonance with **each** one's demands, precedent operations, predilections, or circumstances routinely, and (ii) bring about separate or shared workspaces to reinforce the completion of each undertaking while in progress, consistent with the task to be accomplished, in addition to the user or group characteristics.*

Keywords: *student emotion; adaptive e-learning settings; online course.*

I. INTRODUCTION

An intensifying stream of research holds that the use of computers in education is decisive for learners and teachers. The specific data to be collected necessitates the aims of the adaptive e-learning system. In learning schemes, being able to determine and control information with reference to the students' emotions at a precise moment may be instrumental in comprehending their feasible requirements at that time. Our analysis is cutting-edge by our inspection of the manner adaptive e-learning settings may employ such data to carry out those demands while the program is running [1–4], supplying the student with guidance about endeavors to take on or contents to network with, harmonized with an individual's emotional state. Data in relation to the learner emotions in connection with a course may operate as feedback for the educator. Our analysis builds upon and expands existing research delineating that, in online courses, there is rarely a direct communication between learners and teachers and consequently less reaction. [26]

II. REVIEW OF RELEVANT LITERATURE

Along with increasing expectation concerning and practical demand for virtual courses provided as component of established campus practices, educational approaches that mostly operate in direct classrooms may not translate accurately into online instructional frameworks. Emotion in learning is frequently envisaged as an awareness of or attitudes regarding other individuals (that is, educators or learners) engaged in the educational cooperation [5–9] or concerning a course and its subject matter more broadly. Granted the interaction–emotion–instruction link put forward by the emotional response theory (ERT), learners' emotions may be assessed parallel to effective educator communicative conducts with the purpose of determining aspects of fruitful learning practices. Emotions carry some weight in educational settings as learners participate in instructional processes. A broad diversity of educator communicative conducts envisions learners' practices in classrooms. Albeit some effective behaviors cannot be translated accurately into online settings (e.g. nonverbal closeness), several leading educator communication components may be instrumental [10–16] in online learning settings, possibly generating beneficial results for virtual individuals. [7]

III. HYPOTHESES

Assessing the emotional reaction of learners is essential in the educational process. Employing different social cues to display the same instructional contents shapes the emotional reaction of individuals while learning, influencing their inclination to study in addition to the learning results. Diverse multimedia instructional materials (MIMs) activate learners' emotions via stimulation, contentment, and flow experience, thus impacting the latter's educational driving forces and learning results. Following Lee et al. (2014), we formulate these hypotheses: Social cues represent the MIMs of utterance, human voice, and social functions of e-learning curricula, whereas socialness perceptions constitute the degree to which learners consider computers as social participants [18–20] after the employment of social cues on MIMs. (H1) Stimulation is the interest, restlessness, and extent of arousal displayed by learners after getting involved in an e-learning curriculum. Contentment is the gratification, accomplishment of requirements, recreation, or emotional delight [21–26] undergone by learners after engaging in an e-learning curriculum. (H2) Flow experience is the state of thrill and the deprivation of the cognizance of time lived through by learners who become interested and concentrate on inspecting the subject matter of an e-learning curriculum. (H3) Integrating social cues into an e-learning curriculum may enhance the socialness perceptions of learners by furthering their flow experience, therefore boosting their stimulation and contentment. [17]

IV. RESEARCH METHODOLOGY

We have collated and processed data from East and Central Europe Database/ProQuest (1990–2017), concerning the assessment of the emotional reaction of learners and the associated trends, based on stimulation, contentment, and flow experience. Then we analyzed how Adaptive Hypermedia and Context-based adaptive Mobile Learning Environments are related to tailored e-learning. An educator

may improve learners' perception of closeness via the undertaking of particular verbal schemes (e.g. linguistic options that transmit connection) and nonverbal conducts (e.g. eye contact, smile). Teaching presence represents a concept that epitomizes a diversity of educator interaction conducts significant for e-learning settings. Educational communication is a relevant pedagogical component in any classroom practice. With the rise in e-learning opportunities for learners, numerous teaching conducts established in instructional routine (e.g. educator affinity-seeking/immediacy) have not been thoroughly analyzed in virtual environments. Learners' perceptions of an educator's affinity-seeking, constructive conduct alteration approaches, verbal closeness and educator presence are decisively associated with their beneficial emotional feedback (i.e. perceived educator emotional backing, and learners' effective emotional valence) and conversely associated with their adverse emotional feedback (i.e. perceived emotional labor) to the learners. The more individuals think their educators employ constructive conduct alteration approaches [27–30], the more emotional labor learners feel they participate in. By highlighting a standardized educational policy and communication comprehensibility, online instructors may improve learners' beneficial emotional feedback to the educational setting in addition to their learning practice widely envisaged. [7]

V. RESULTS

Adaptive Hypermedia may be utilized in the contexts of e-learning to build up tailored learning, by moving up the most adequate assignment to be performed by each individual methodically, along with the most significant multimedia elements to be disclosed to each of the learners, corresponding to personal attributes, options, preexisting operations, framework, etc. Context-based adaptive Mobile Learning Environments constitutes a robust e-learning system decisive in comprehending the student's sentiment, shoring up the disposition and shifting formation of e-learning contexts able to (i) indicate autonomous or joint tasks to be completed by each individual or group in keeping with each one's requirements, prior performances, propensities, or circumstances regularly, and (ii) generate distinct or collective workspaces to buttress the finalization of each task while ongoing, in line with the undertaking to be attained, along with the individual or group attributes. It opts for the most appropriate content narratives [31–35] and separate/synergetic devices for each case and brings about the corresponding workspace. [26] (Figures 1–3)

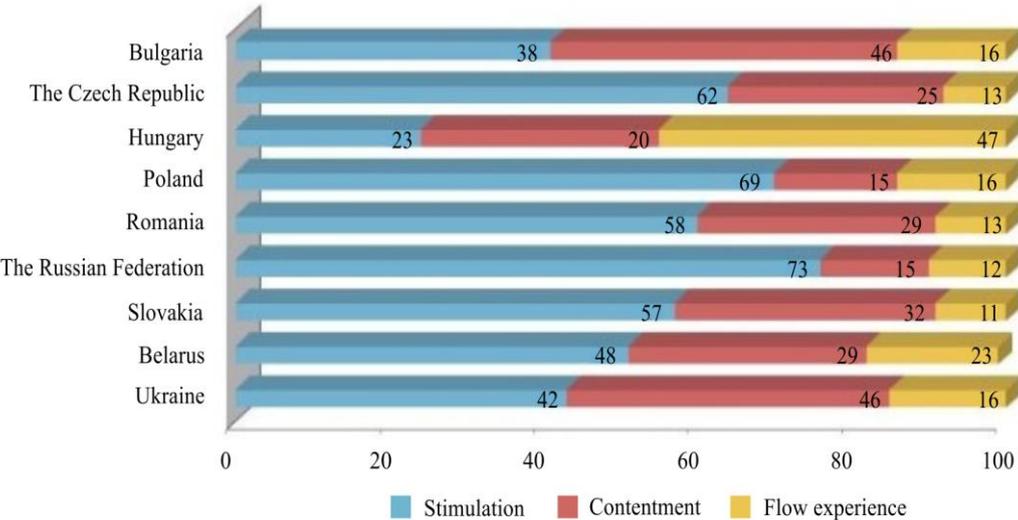


Figure 1. Assessing the emotional reaction of learners (% , Eastern Europe countries)

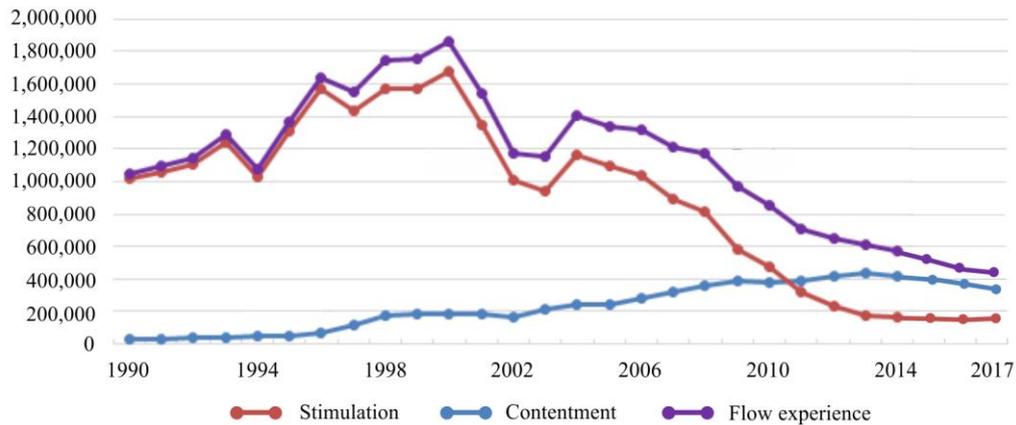


Figure 2. Trends in emotional assessment of students (total number, Eastern Europe countries)

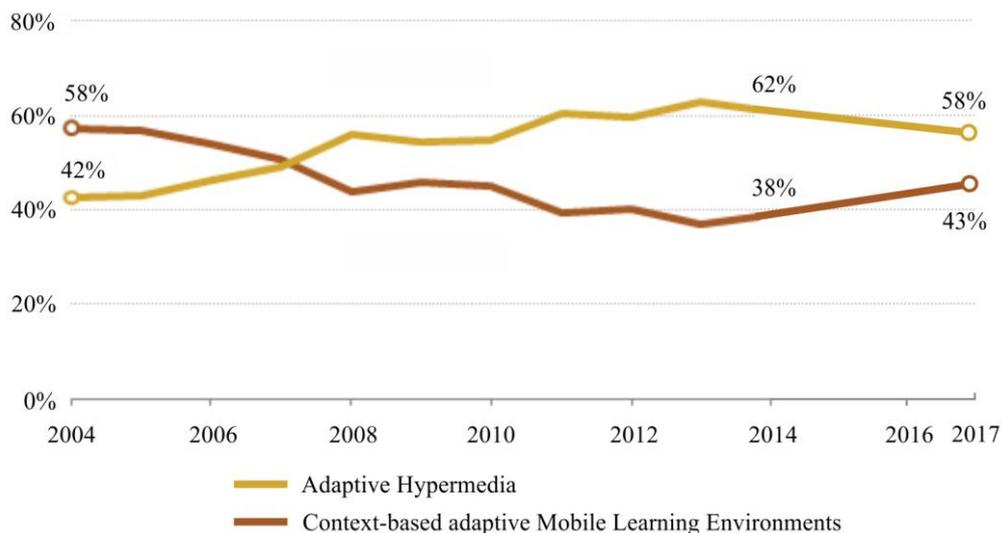


Figure 3. Building up tailored e-learning and comprehending the student's sentiment

VI. CONCLUSION

Stimuli that employ social cues (that is, utterance, human voice, and animated characters) may stimulate the socialness perceptions of learners who engage in an e-learning curriculum. As their attitudes of thrill or apprehension concerning the MIM stimulated their concern and thirst for knowledge, their attentiveness on the course content ameliorates. Thrill, thirst for knowledge, and attentiveness are essential components for gaining a flow experience. After they undergo an e-learning curriculum, the learners' socialness perceptions are produced by the impulse of social cues in the software/website (that is, utterance, human voice, and animated characters). Learners feel passionate or anxious concerning the e-learning curriculum subject matter, thus arousing contentment (that is, thrill, appropriate likelihood, enjoyment, and delight). After learners have engaged in an e-learning curriculum, their concern and thirst for knowledge are stimulated and thereby it is easier for them to focus on the courses and gain a flow experience state, undergoing elation, leisure, and gratification, thus confirming our hypotheses. A beneficial link operates between the contentment learners experience while engaging in an e-learning curriculum and their educational incentive. [17]

Diverse MIMs may influence the perceptions of students and bring about constructive or adverse emotional feedback. Among the limitations, more hypotheses should be tested to prove that the exhibitions of distinct MIMs may curb their excitement and eagerness to engage in the e-learning course whether the MIMs cannot produce constructive emotions. After they undergo the e-learning

curriculum and are motivated by the use of utterance, human voice, and animated characters displayed by employing a computer interface, the learners have superior socialness perceptions to generate flow experience, encouragement, and gratification. When the learners display arousal states (e.g. delight and apprehension), they participate more in the present undertaking and gain a flow experience state. Further research should clarify whether after they undergo the e-learning curriculum and are motivated by the use, in the computer interface, of utterance, human voice, and animated characters, students feel delighted about the presentation subject matter, thus undergoing gratification, contentment, and relaxation. [17]

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