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Learning Through Goal Setting

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ABSTRACT
Despite the mounting evidence supporting the role that goal setting has on the learning process, there seems to be only a handful of studies that directly investigate goal setting in the context of Learning Analytics (LA). Although investigations have incorporated elements of goal setting, the attention afforded to theory and operationalization have been modest. In this workshop we plan to position goal setting at the forefront of LA research. The workshop will serve as a venue to bring together researchers interested in advancing Goal Setting (GS) research in the LA field. Topics include: (1) GS theory and measurement; (2) analysis and visualization of GS data; (3) strategies for integrating GS in the learning experience; and (4) implementation of GS technologies. Participants who need tools to execute their GS ideas and those who already have tools and are exploring better ways to integrate a goal setting feature can gain a lot from this workshop. Moreover, participants will have the opportunity to contribute to the conceptualization and staging of GS ideas in LA research.

CCS Concepts
• **Applied Computing→Education→E-learning.**

Keywords
Goal Setting; Learning Analytics; Learning Record Store

1. MOTIVATION
Since learning is oftentimes a goal oriented process, Goal Setting (GS) theory with its firm track record in educational research, specifically in studies about student motivation, has the potential to address one of the aims of Learning Analytics, that is, to optimize learning [2, 4, 5, 7]. Learning goals guide learners to where learning is relevant and enable them to focus their effort and attention to goal-related activities [3]. The focus is made possible by highlighting aspects important for learning while ignoring irrelevant ones.

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Another way in which goal setting might contribute to advancing LA is that it may be used to facilitate self-reflection through goal progress tracking. When learners set goals they engage in what is called a discrepancy-creating process [6]. The subsequent process of resolving this discrepancy allows learners to reflect on their performance and to adjust the magnitude and direction of their effort to match goal requirements. Goal setting as a self-reflection mechanism also has important implications for self-regulated learning (SRL). In a study involving high achieving students, it was found that an increase in mastery goals led to the increasing use of SRL strategies [1].

Goal reasoning, a framework dedicated to the application of goal setting in the context of intelligent systems, is investigating ways of giving artificial systems the autonomy to formulate, select and manage goals. LA, being at the crossroad of educational research and information technology, has a lot to gain from this framework [8]. As learners interact with educational technologies that support goal setting, these technologies may collect and analyze learners' goal orientations and goal setting activities. Using this setup it may be feasible to provide students with goal recommendations that are tailored to their own context, personality, preferences, and orientations. With the implementation of such technologies, goal setting may contribute to yet another aim of LA, that is, prediction which refers to forecasting learners' next move. One of its applications is in predicting student drop-out or attrition. In the context of goal setting, goal prediction refers to forecasting what goals that students might want to pursue next in order to achieve a learning outcome. What we are envisaging then is that goals which were shown to lead to better performance in one cohort of students are recommended to individual students in the subsequent cohort.

A final way in which goal setting might contribute to advancing LA is that it has the potential to generate primary data pertaining to students' offline learning activities, thereby addressing an important limitation of those LA studies that are based on secondary data generated by administrative systems or electronic learning environments.

Given these potential contributions, the time is ripe to bring together LA and Goal Setting researchers in an open marketplace of ideas. This workshop will be an opportunity to consolidate research findings from educational research, learning technologies and research within LA itself.

2. OBJECTIVES

The main objectives of the workshop is to bring together researchers, so as to discuss ongoing research and identify promising directions for studies that apply GS in the LA context. It hopes to bring together researchers from both the 'learning' side and 'analytics' side to discuss the underpinning rationale for design choices in the context of data-driven learning and teaching. Specifically we will discuss the theoretical and empirical aspects of traditional GS as applied to education. Moreover, the workshop will also serve as a venue where technologies supporting goal setting can be demonstrated. In this regard, the workshop will showcase a work in-progress experiment in which goal-setting is embedded in courses using a standalone dashboard. It will demonstrate the quality of LMS data with regard to applying LA techniques to 'extract' meaning. Lastly, analytics applied to data collected through goal setting technologies will be addressed.

3. WORKSHOP FORMAT

3.1 Audience

The workshop is open to all LA researchers with an interest in GS. Relevant fields on the 'learning' side are learning science, educational psychology, assessment and evaluation, curriculum and pedagogy design, management (because goal-setting has been widely used in HR management across industries, experts in this field bring in knowledge of this concept). Relevant fields on the data side are educational data mining, machine learning, HCI, computer sciences, and educational statistics.

There will be a call for papers[1] inviting contributions relevant to the workshop topics. The topics are aggregated into four topical groups, namely, (1) GS theory, (2) GS measurement and analytics, (3) the relationship between GS and other educational outcomes such as interest, motivation, engagement, and academic performance, and (4) GS technologies. Accepted papers will be published in the CEUR workshop proceedings.

3.2 Format

We propose a half-day workshop with at most four paper presentations and at most two software demonstrations.

The first part of the workshop will be an introduction of the workshop by the organizers. This will be followed by a keynote about Goal Setting in the academic context. Afterwards, workshop participants will be assigned to three groups. Each group will discuss one of these three topic groups: GS Theory, GS measurement and analytics, and Relationship between GS and other education outcomes.

The lead discussants of each group are the authors of the accepted papers assisted by the organizers. Authors of accepted papers are requested to prepare a 10-15 minute presentation and the presentations should incorporate what have transpired during the group discussion.

Group discussion will last for an hour. While having discussions the participants can pause for a coffee break. After group discussions, the presentations will start. There will be a short question and answer portion after every presentation. Aside from the presentation there will be a demo of GS technologies and sample use cases. The demo will cover the fourth topical group which is the GS technologies. After all presentations are done, there will be an open forum. The open forum will be directed to further elaborate the role of GS in the LA setting and discuss outstanding issues. The workshop will end by wrapping up the main points that have emerged during the discussions and explore the possibility of establishing a GS Special Interest Group (SIG) within LA. The SIG will have the primary mandate of advancing and popularizing GS research in the context of LA.

[1] *see* https://sites.google.com/site/lakgoalsetting/

3.3 Tentative Schedule

13:00-13:15 Welcome and Introduction (by the Organizers).

13:15-14:00 Keynote.

14:00-15:00 Break-out Groups with Coffee Break.

15:00-15:30 Group Presentations

15:30-15:45 Demo of Goal Setting Software.

15:45-16:15 Open Forum.

16:15-16:30 Wrapping up and formation of the SIG.

4. ACKNOWLEDGMENTS

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5. REFERENCES

[1] Ablard, K.E. and Lipschultz, R.E. 1998. Self-regulated learning in high-achieving students: Relations to advanced reasoning, achievement goals, and gender. *Journal of Educational Psychology*. 90, 1 (1998), 94–101. DOI= http://dx.doi.org/10.1037/0022-0663.90.1.94

[2] Gegenfurtner, A. and Hagenauer, G. 2013. Achievement goals and achievement goal orientations in education. *International Journal of Educational Research*. 61, (2013), 1–4. DOI= http://dx.doi.org/10.1016/j.ijer.2013.08.001

[3] Latham, G.P. and Locke, E.A. 2007. New Developments in and Directions for Goal-Setting Research. *European Psychologist*. 12, 4 (Jan. 2007), 290–300. DOI= http://dx.doi.org/10.1027/1016-9040.12.4.290

[4] Lavasani, M.G., Weisani, M. and Ejei, J. 2011. The role of achievement goals, academic motivation, and learning strategies in statistics anxiety: Testing a causal model. *Procedia - Social and Behavioral Sciences*. 15, (2011), 1881–1886. DOI= http://dx.doi.org/10.1016/j.sbspro.2013.12.810

[5] Leake, D.B. and Ram, A. 1993. Goal-Driven Learning: Fundamental Issues: A Symposium Report. *AI Magazine*. 14, 4 (1993), 67. DOI= http://dx.doi.org/10.1609/aimag.v14i4.1069

[6] Locke, E.A. and Latham, G.P. 2002. Building a practically useful theory of goal setting and task motivation. A 35-year odyssey. *The American Psychologist*. 57, 9 (Sep. 2002), 705–717. DOI= http://dx.doi.org/10.1037/0003-066X.57.9.705

[7] Meece, J.L., Anderman, E.M. and Anderman, L.H. 2006. Classroom Goal Structure, Student Motivation, and Academic Achievement. *Annual Review of Psychology*. 57, 1 (Jan. 2006), 487–503. DOI= http://dx.doi.org/10.1146/annurev.psych.56.091103.070258

[8] Vattam, S., Klenk, M., Molineaux, M. and Aha, D.W. 2013. *Breadth of approaches to goal reasoning: A research survey*. DTIC Document.