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GOAL-SETTING: LEARNINGS FROM A BUSINESS PROCESS MANAGEMENT CLASS ASSIGNMENT

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Abstract

Goal setting is an important part of business process management requiring metrics against which to measure performance. Similarly, as future business process analysts, information systems students require goal setting and measurement competencies. Following an inductive process, goals set by students with no a-priori training in self-assessment were explored based on two questions: What goals do students set? And how do they assess these goals? The findings reveal that students make use of multiple goal types with goals of effort and understanding linked to higher performance. Furthermore, goals need not be explicitly stated nor defined prior to beginning a task to be effective. Higher performing students were better at self-assessment which was considered a function of goal setting and previous self-assessment experience. In addition, the findings reveal temporal aspects to goal setting with short-term goals providing better outcomes. Goal setting was shown to be entangled with types of goals transcending temporal levels. Additional entanglements were observed with goals providing motivation and increased self-efficacy but are in turn moderated by lack of motivation and low self-efficacy. Assemblage theory was applied to understand the emergent properties of the entanglements. From an assemblage perspective, goals, goal types, goal levels, self-assessment, motivation, and self-efficacy combine with the individual and their environment in diverse ways to form larger goals that can be replicated throughout a person's life. From a practice perspective, educators can design course interventions being cognizant of the impact of goal setting and self-assessment on student outcomes.

Keywords

Goal setting; self-assessment; self-efficacy; motivation; education; business process management.

1. Introduction

Successful accomplishment of goals is a significant source of motivation for people (Martin, McNally, & Taggar, 2016) including students in the classroom (Boekaerts, de Koning, & Vedder, 2006). In the 1970's a revolutionary understanding of motivation was proposed by Ryan (1970) (in Locke & Latham, 2002) who suggested that consciously setting goals affects action in a positive manner. Until then it was believed that external factors outside of the person regulated motivation. Ryan studied aspiration as an independent variable in contrast to the dependent variable of motivational researchers such as Lewin (Locke & Latham, 2002).

A common error in goal theory paradigms is the focus on a single type of goal. Educators assume that mastery is the principal motivator of students for learning (Lemos, 1996) but students are observed to enter the classroom with multiple goals (Boekaerts et al., 2006). Based on the assumption of mastery as an implicit goal, educators hand out assignments in the belief that students are sufficiently motivated to complete the assignment. Beyond inclusion of rubrics students are typically not provided with formalized goals. As a result, students rely on previous experience (Bargh & Chartrand, 1999; Locke & Latham, 2002) on which to set their own goals (Martin et al., 2016). This leads to the question of what goals

students set and how these goals relate to performance. In this study these issues are explored based on implicit goal setting by teams of business process management (BPM) students at a South African University. The aim of the study was to afford understanding of what motivates students of BPM courses. A secondary aim is to reveal the interconnectivity of theory and research by applying a concept in the substantive topic (BPM) to the area of assessment and learning.

In the next section, the background to goal setting for this study and the research question are provided. Section 3 describes the methods used to undertake the study and section 4 details the study findings. The findings are discussed in section 5 and supported by literature. Section 5 also provides an outline of assemblage theory which provides insight into structural anomalies encountered in the study prior to the conclusion in section 6.

2. Background

A fundamental principle of education is to develop the abilities of students to evaluate their own work so as to become effective practitioners (Boud, Lawson, & Thompson, 2013). Accurate assessments of own work provide feedback on where work can be improved. The need for improvement implies that a gap exists between the current outcome and the desired outcome. Desired outcomes are thus goals which become the objects and aims of sets of actions (Locke & Latham, 2002). Self-regulated learning through setting and evaluation of own goals has been demonstrated to be effective in leading to improved performance (Bandura & Schunk, 1981; Boud et al., 2013)

Goal setting theory dictates that goals require clarity, challenge, complexity, commitment, and feedback (Latham, 2003; Locke & Latham, 2002). For clarity, goals should be specific, measurable, achievable, realistic, and time-based (SMART) (Latham, 2003). These SMART goals must maintain a balance between low and high levels. Goals set too low (such as, to do your best) provide insufficient motivation and do not engender persistence. On the other hand, goals set too high result in negative motivation. Goals may be externally set by the environment (for example, by the educator) or self-set. Goals originating externally are moderated by both self-set goals and self-efficacy. In turn, self-efficacy is closely linked to goal setting (Bandura & Schunk, 1981; Locke, 1996) with high self-efficacy increasing motivation and low self-efficacy decreasing motivation for identical goals (Locke & Latham, 2002). Where external goals are absent, people may set goals automatically through a process known as automaticity (Bargh & Chartrand, 1999). Automaticity is a process whereby implicit goals are automatically activated by external, environmental information and events. Automaticity has been observed to produce mood and self-efficacy changes leading to the inference that motivation originating from automaticity is equivalent to consciously set goals (Bargh & Chartrand, 1999).

Lemos (1996) relies on goal automaticity in her research into goals of young students. She determines three time-based levels of goal proximity and four goal dimensions – working; complying; evaluation; and learning goals. Working goals relate directly to the task at hand while complying goals are socially influenced by the immediate environment. Evaluation goals are motivated by the desire for positive evaluations and learning goals by the desire for knowledge. Lemos shows that while educators expect learning outcomes to be mastery of a topic measured through achievement of higher grades, students approach learning from situations that may form an alternate set of goals. Consequently, this research seeks to identify what types of goals are commonly pursued and how these goals relate to

performance as measured by grades. The first research question asks what are the types of goals that students set and the second question, how do these goals relate to grades?

3. Method

The study analysed student feedback from a BPM assignment which formed part of a third-year level information systems course. The assignment was performed by teams of 5 students with the objective of analysing and redesigning a business process in an organization. The final deliverable was the submission of a report which included a self-assessment rubric as well as a self-assessment description. Reports from 10 student teams were analysed using a general inductive process (Thomas, 2006) to determine what goals students set for themselves. As goal setting information was not explicitly requested from the students, implicit goals pursued by the teams were inferred. This was followed by an examination of what types of goal lead to better outcomes in terms of higher grade. We then examined how far the self-assessment rubrics differed from the actual grade and how these differences compared to the goal types. At the outset, it was observed that whereas the goals were related mainly to the task at hand some students took a longer-term view. Based on reflection this led to the notion of levels of goals ranging from short term goals (proximal) to longer term goals (distal). Through multiple readings of the self-assessments coded patterns of proximal goals and distal goals were identified. These findings are reviewed below followed by a discussion.

4. Findings

Two methods of categorizing goals emerged: by goal type and by level of goal. The types of goals related directly to the method of pursuing the goals while the levels of goals related to the time-frame in which the goals were pursued. Interrelationships between levels and goal types were observed with types of goals transcending levels. Interestingly some goal types and levels of goals only became apparent during the task and not as extant perceptions would have it, prior to the task.

4.1. Levels of goals

Underlying the self-assessments was the implicit knowledge that students want to (a) successfully complete the assignment, (b) obtain a good grade, (c) complete their degree and (d) ultimately be employed. Consequently, three time-based levels of goals were identified (i) an immediate goal level, (ii) an intermediate goal level, and (iii) a long-term goal level.

4.1.1. Immediate goals

The self-assessments were primarily concerned with proximal goals which are discussed in section 4.2. The types of goals were not restricted to the immediate goal level but were also observed across levels. For instance, the goal of understanding was considered relevant across levels.

4.1.2. Intermediate goals

Intermediate goals are implicit with no relevant observation in the current study.

4.1.3. Long-term goals

Two teams were observed to take a longer-term view in the form of employment. Part way into the assignment Team K realized that the work they were undertaking represented the content of their potential future employment while Team R recognized that the skills they were gaining would be beneficial for their careers. Both teams indicated an attitude shift based on these realizations. *“Each team member’s attitude towards the project [assignment]*

immediately changed as we began to realize that this was what our future jobs would entail.”, (Team K).

4.2. Types of goals

Four coded goals, namely tasks (T), efforts (E), understanding (U), and quality (Q) were observed to function both as discrete goals and in combinations of goal types as shown in Table 1. Three teams (Teams E, J, and O) had single primary types of goals while the other teams showed evidence of pursuing combinations of goal types. Nevertheless, in each case a single goal type was prevalent and is indicated first in Table 1.

In the study the two prevalent types of goal were task and effort. A simple ranking of the unique mentions showed close relative importance of the goal types. Effort (count = 7) and task (count = 6) related goals were closely followed by understanding goals (count=5) and quality goals (count=4). Of note were the cases with multiple goals. In four cases task (T) goals were supported by either understanding (T/U) (count=1), effort and quality (T/E/Q) (count=2), or effort, understanding and quality (T/E/U/Q) (count=2). Likewise, effort (E) goals were supported by understanding (E/U) (count=2) and task goals (E/T) (count=1).

Ranking	Team	Self-Assessment	Actual Grade	Difference	Diff %	Abs Diff %	Goal Types
1	K	85.0	79.0	6.0	8%	8%	E/U
2	L	77.0	76.5	0.5	1%	1%	T/E/U/Q
3	R	68.0	69.0	-1.0	-1%	1%	E/U
4	J	70.0	61.5	8.5	14%	14%	T
5	P	56.0	61.0	-5.0	-8%	8%	T/E/Q
6	O	68.5	60.5	8.0	13%	13%	E
7	N	63.0	56.5	6.5	12%	12%	E/T
8	E	76.0	51.5	24.5	48%	48%	Q
9	F	59.0	47.5	11.5	24%	24%	T/U
10	M	66.0	38.5	27.5	71%	71%	T/E/U/Q
Averages		68.9	60.2	8.7	14%		

Legend: T=Task; E=Effort; U=Understanding; Q=Quality

Table 1. Types of Goals and Associated Grades.

4.2.1. Task goals

Task goals are integral in assigned tasks and consequently are also referred to as assigned goals (Locke & Latham, 2002). An example of an explicit reference to tasks was provided by Team D: “... compiled a report of which we believe covers the brief ...”. Task related goals were mainly stated in positive terms: “We think the business case goes straight to the point ... We think we did well .. because we identified and defined the [master data] ...”, (Team M). On the other hand, some teams described reasons for an anticipated lower task related outcome. “... issue here was in the ability to obtain accurate metrics ... it was difficult to quantify various aspects ...”, (Team L).

4.2.2. Effort goals

Recurring references to the extent of the effort expended by the teams were observed. “Great effort ... Major effort ... Lots of effort ...”, (Team K). “... we put in weeks and weeks of hard work ...”, (Team R). Effort was also described from a negative stance, for example, Team N: “... we could put more effort into it ...” and Team P who repeatedly stated “... we could have ...”. Respondents considered effort to be moderated by external factors. “... the [University] shutdown decreased the amount of time we had to do the assignment ...”, (Team N). Analogous to negative task goals, awareness of inferior efforts was observed as mitigating

factors for anticipated lower grades. “...more information could have been added ... more research could have gone into the organizational chart ...”, (Team P). Furthermore, teams pursuing effort goals were demonstrably aware of instances of lower effort. In each rubric assessment Team O used the word “effort” bar one where the team avoided implications of effort stating: “Options of redesign were looked at”. They then attempted to mitigate their perceived lower effort by detailing actual effort undertaken. “... Explained improvements and how root cause problems can be solved...”, (Team O).

4.2.3. Quality goals

Four teams considered quality of their work using terms such as “quality”, “comprehensive”, “clear”, and “orderly”. From this it was inferred that their aim was to surpass simply completing the task. As a goal, quality was observed to be overt: “... to work hard producing a quality presentation”, (Team L). Negative aspects were observed through feelings of being restrained from a quality outcome. “... we felt as if some people we interviewed were holding back ... making it hard for us to really put in place ways to improve...”, (Team E).

4.2.4. Understanding goals

The need for understanding was apparent through use of terms such as: “good understanding”; “in-depth understanding”; and “gain a better understanding ...”. Understanding as a moderator was observed where an interviewing strategy was modified due to “... the difficulty to understand the complexity of the business process ...”, (Team M). Interestingly, awareness of understanding as a goal emerged only after the assignment was underway. “... we had to sit together and try and work out what was required by us and how we could provide a solution ...”, (Team F). Furthermore, a clear link to effort goals emerged. “To gain an understanding ... we designed a variety of as-is diagrams.”, (Team K). Meanwhile, self-assessment revealed awareness of lack of understanding. “The main problem we faced was the difficulty to understand the complexity of the business process ...”, (Team M). In contrast to other types of goals, understanding was observed to permeate proximal and distal goals. “If we had not perfected this, then the project [assignment] as a whole would be greatly misunderstood and would have led to failure.”, (Team R) and “... make sure all team members understand the business process well before we start ...”, (Team E).

4.2.5. Task, effort and quality goals

Task and quality goals were observed to be combined with a negative view of effort. “We clearly identified the project [assignment] and scope [task and quality] ... Covers all points [task] however, we could have gone more in depth [effort] ...”, (Team P).

4.2.6. Task and understanding goals

Task goals were also connected to a lack of understanding. Insecurity in completing the task appeared to stem from the lack of understanding. “We tried our best to describe the current process... we think we covered all [task] ... took a bit of time to complete as it had to be done accurately [understanding] ...”, (Team F).

4.2.7. Task, effort, understanding and quality goals

Some teams combined all four goal types: task, effort, understanding, and quality. “We feel we were able to identify the main key stakeholders [task] ... we covered the collaboration diagram in very great detail [effort]... The team’s ability to analyse and understand a business process was largely improved [understanding]... The team learnt to understand ... drove the team to work hard at producing a quality presentation [quality]...”, (Team L).

4.2.8. Effort and understanding goals

Effort was combined with understanding. “.. *balance a substantial amount of university work with external deliverables [effort] ... gained insight into how to innovate when not understanding the problem context [understanding] ...*”, (Team R).

4.2.9. Effort and task goals

Effort and task goals were also combined. “*The team put a major effort into the reports [effort], since this counts a significant amount towards the assignment [task].*”, (Team N).

4.3. Grades

Self-assessed grades were compared to actual grades for each team as shown in Table 1 above. The ranking was compared (i) to the goal types, and (ii) to the absolute differences between the self-assessed and actual grades. On average students over-estimated their grades by 14% with two teams under-estimating their grades. One team (Team R) underestimated by 1% and the other by 8% (Team P). Over-estimation ranged from 1% to 71% above the actual grade. Examination of the ranking comparisons revealed that higher performers were more accurate in self-assessing their grades. Likewise, the greatest differences between self-assessment and actual grades were observed amongst the students with the lowest actual grades.

4.4. Findings summary

The findings reveal that students use combinations of goal types for proximal goals. The different types of goals do not appear to influence higher performance as measured by grades. However, combinations of effort and understanding together with task goals were noticeable amongst the higher grades. Although quality goals were seen to support higher ranked grades, lower grades were noticed when quality was pursued on its own. In respect of self-assessment, higher performing students had noticeably smaller differences between their self-assessments and the actual grades obtained.

5. Discussion

In this inductive study the goal setting behavior of BPM students was explored. Literature provided a background to the research and emergent themes from the data used for theory building (Bhattacharjee, 2012). In this section a goal setting framework is proposed. Following the inductive approach this study was grounded in data and was not guided by a theoretical framework. However, the findings are compared here to those of a similar goal setting study undertaken amongst grade 6 school children by Lemos (1996).

5.1. Types of goals

Four goal types were observed in the study which extend beyond the provided rubric and show a level of automaticity in the setting of goals. For example, effort was a common factor amongst students but not part of the rubric. Lemos (1996) determined four comparable types of goals which she describes in terms of their affordances and constraints. Lemos’s working goals are analogous to the task goals of this study. Complying goals are comparable to effort goals and evaluation goals to quality goals. Lastly, her learning goals are comparable to understanding goals.

5.1.1. Task - working goals

Lemos considered working goals to be both novel, unique, and primary. In the current study, none of these characteristics were observed for task goals. This is postulated to be the result of differences in scope between the studies. Whereas in the current study the time boundary for the first level was set as the length of the assignment, Lemos focused on immediate activities such as writing on the blackboard (Lemos, 1996). Similar to Locke and Latham (2002), Lemos considers working goals as essentially the performance of an assigned task. These goals take little extra effort and are considered to protect the goal-setter from the frustration of not accomplishing higher goals. Consequently, with no differentiation between the goal and the assignment a good grade can be obtained by merely completing the assigned task.

5.1.2. Effort – complying goals

Complying goals are based on the effort of the student complying with “what they are supposed to do” (Lemos, 1996, p. 165). This results in the belief that more effort in complying with class ideals will lead to a higher grade being obtained. However, excessive effort may undermine learning and result in compliance to alternate personal or socially induced goals.

5.1.3. Quality - evaluation goals

Evaluation goals reflect students’ belief that pursuing quality will produce desired outcomes. It exposes the desire to be evaluated positively and avoid negative academic evaluations. However this type of goal may inhibit motivation and result in negative achievement activity (Lemos, 1996) such as observed in the quality focus of Team E of this study.

5.1.4. Learning – understanding goals

Learning goals are the direct motivation to understand and are the ultimate goal of education. Lemos (1996) observed a low-level of learning motivation indicating the potential of lower academic success and poorer self-regulated learning.

5.2. Grades and goal types

The findings were inconclusive in respect of the types of goals leading to the best outcomes for education. Nonetheless, a link was observed between the combination of effort and understanding goals and higher grades. For the other goal types, task goals were spread across the range of grades while pursuing quality alone resulted in mediocre performance. Logically, tasks goals will be important as a student who does not adhere to the assigned task cannot expect a satisfactory outcome in terms of grades. Although quality is important it should follow effort and understanding both of which are essential for higher quality. This may well be the reason that quality is often deemed to be of low importance (Ackoff, 1976).

The observation of higher performance being associated with effort and understanding may be understood from the perspective that effort in pursuing clearly understood goals is likely to have a better outcome than simply doing your best (Locke & Latham, 2002). Skills necessary for pursuing effort and understanding goals are more comprehensive than task (working) goals alone. While task goals can be applied to related situations, effort and understanding can be expanded to dissimilar tasks. For example, task goals set in the BPM assignments may help students in other BPM assignments and even in business analysis assignments. On the other hand, learning presentation skills and preparing multiple models are skills that can be used in multiple settings to produce a variety of outcomes.

Goals are not set in isolation and multiple goals are frequently pursued simultaneously as shown here and supported by literature (Boekaerts et al., 2006; Lemos, 1996). In this study, multiple goals were observed to produce better outcomes in the form of higher grades than single goal types. For example, each of the Teams J, O, and E who pursued only task, effort, or quality goals respectively received unexceptional grades. This indicates that the restriction of Lemos (1996) to only working goals (task goals) at the first level may be too low and could benefit from multiple goals.

While combinations of effort and understanding goal types were observed to produce better results this was not predictable as shown by two teams (Teams L and M) who combined all four goal types. Team L obtained a grade of 76.5% while Team M obtained 38.5%. The lower outcome resonates with Lemos's (1996) warning that setting multiple goals could result in poorer outcomes through conflicting types of goals. She suggests the need for further research to understand how combinations of conceivably incompatible goal types are dealt with by students.

Types of goals were observed to evolve during tasks as highlighted by Team F's need to develop understanding of what was required to complete the task. The understanding goal emerged in support of the task-related goal of obtaining a good or higher grade. The higher grade in turn was required to pursue a higher goal of obtaining a degree. Thus, understanding became both a proximal and a distal goal. Two implications of goal setting are revealed in this observation (i) goals, particularly proximal goals, may be set during the pursuance of distal goals, and (ii) goals are not linear in nature. Both observations are problematic for the traditional understanding of goal setting. Setting of goals were observed to be neither linear nor temporally permanent but continuous. They are not fixed at the beginning of a venture and cannot be assigned to a single time-frame.

5.3. Levels of goals

The study considered three temporal levels of goals: immediate; intermediate; and long-term. Lemos (1996) also observed three levels: first level goals; second level goals, and third level goals which she based on the relationship between an activity and its goal. At her first level, goals related closely to activity itself. She refers to this as non-intentionally oriented action which is linked to her primary goal type of "working". This goal is analogous to the current study's task goal type. Understanding the fundamental differences between the two studies may provide some insight into goal setting. In the Lemos study young school children (ages 11 and 12) were studied in a classroom situation with a general goal of passing multiple 6th grade subjects. In comparison, this study's proximal goal was an assignment completed over 2 months at a 3rd year higher education level. Lemos identified task (working) goals as the single explicit goal at the first level however this remained implicit for the current study. Nevertheless, task goals permeated the spread of grades below 62% as shown in Table 1. Two auspicious types of goals were effort (complying) and understanding (learning) goals. This reveals that assigning tasks is necessary but not sufficient for better performance. At the second level, Lemos determined intentionally oriented action which related more closely to her learning type of goal. The equivalent type of goal in the current study is the goal of "understanding" which was observed in the goal levels of immediate and long-term. Once again the difference in the studies could be explained by alternative goal focus. At the third level, both studies observe long-term goals to be vague with Lemos (1996) referring only to generic goals of obtaining an education and future employment.

At the first and second goal levels (immediate and intermediate) the differentiation is shown to be based on both time and activity. At her first goal level Lemos observed goals based on an extremely short time-frame even though the primary goal (subject grade versus assignment grade) was longer and more general. In this study the goal time was shorter and more specific being directly related to the BPM assignment. Consequently, the immediate or first level took on different meanings in respect of time. The difference in focus showed that types of goals have different measures of importance at different goal levels.

5.4. Assemblage theory

Two considerations are revealed in these findings, (i) although types of goal are similar they differ at the level of activity, and (ii) the types and levels of goals are entangled. The entanglement extended to motivation and self-efficacy which both influence goal setting and are influenced by goal setting. The observations that goals are neither bound to time nor to order decrees the need for an alternate understanding of goal setting. A theory that may provide insight is assemblage theory based on Deleuze and expounded by DeLanda (2006). Unlike traditional linear and hierarchical views, assemblage theory considers everything an assemblage comprised of other assemblages. Accordingly, there are no individual, group, society, or species, genus, phyllo, family, order, class, phylum, kingdom structures. Individuals are theorized to be assemblages of component assemblages. Whereas assemblage theory recognizes causality within the assemblages in a context, different combinations show emergent causal properties in higher assemblages. Such causality is not generalizable as each higher assemblage comprises non-similar combinations of lower level assemblages. In different configurations, the individual assemblages form larger assemblages that territorialize ever increasing areas.

Reviewed from an assemblage theory perspective each goal is an assemblage which can form larger assemblages. Whereas the three levels of goals in this study were originally defined cognitively as linear (immediate, intermediate, long-term) they were subsequently observed to be interrelated and non-linear. DeLanda (2006) uses the metaphor of Russian Dolls to describe linearity which is not exhibited by the goal levels structure in this study. For example: Team N reported that they “... *put a major effort into the reports, since this counts a significant amount towards the assignment...*” inferring that a proximal goal (effort) will support the pursuit of distal goals of a good grade for the course and further to their degrees. Team K were more explicit in viewing the distal goal of employment from pursuing the current proximal goals: “*Each team member’s attitude towards the project [assignment] immediately changed as we began to realize that this was what our future jobs would entail.*” (Team K).

Types of goals were observed to interact with each other across multiple levels. In assemblage terms, transcendence between micro-macro levels and part-to-whole assemblages was observed (DeLanda, 2006). This is most noticeable in the goal of understanding as a form of learning. Learning was shown to cross all levels from micro-level through macro-level. As an assemblage, learning was observed as a type of goal for the assignment which was a component of learning for the BPM course which in turn was a component of learning for a degree. This exhibits the part-to-whole nature of assemblages combining to produce further assemblages that are virtual copies of each other but not identical. The goals were considered to span different time-periods. According to assemblage theory component assemblages are of shorter duration than the assemblages they form part of (DeLanda, 2006). For example, the types of goal pursued for the assignment ceased to exist after the assignment was graded. In a similar manner the types of goals pursued towards obtaining their degrees

cease to exist once the student has obtained the degree. However, as an assemblage the goal type (for example, learning) continues to exist, albeit in a different format as an alternate goal. The goal of understanding and learning endures beyond the immediate and continues into an infinite future.

The goal of understanding permeating the structure is problematic in traditional hierarchical thinking. Assemblage theory overcomes this by viewing the goal of understanding as an assemblage that is combined with other understanding goals (decalcomania) to extend throughout the area under review (multiplicity). Each of these goals will differ and can only be causal in their emergent properties. Should one goal of understanding be changed or broken then each of the broken parts have the potential of existing in a different format (asignifying rupture). In this way, the goal of understanding can connect to other assemblages and multiply throughout the environment (connection). The connection is not limited to the understanding goal type but extends to other goal types and even other levels (heterogeneity). According to Deleuze and Guattari (1987) assemblages must connect to other heterogeneous assemblages. Goals are consequently viewable as a map (cartography) not as a tracing. In other words, they are not identical replications but change depending on the environment while retaining a semblance of the original. Accordingly they are not essences in the essentialist tradition (DeLanda, 2006).

5.5. Self-assessment assemblages

Self-assessment can also be understood from the perspective of assemblage theory. According to Boud and Soler (2016) self-assessment is essential for life-long learning and is both a learned and learnable skill. Boud et al. (2013) posit that self-assessment improves performance. This is supported by the observation that self-assessed grades of the higher performing students are notably closer to their actual grades than lower performing students. Nevertheless, when confronted with new subject matter the self-assessment of students is initially less effective (Boud et al., 2013). Assemblage theory provides clarification for this effect through the observation of the link between effort and understanding and the superior self-assessment of stronger students. Stronger students typically undertake additional effort and understanding especially when confronted with new subject matter. This leads to higher performance and consequently improved self-assessment. Unlike Lewin's concept of behavior as a function of person and immediate environment (McGill, 1938) assemblages continue to extend through multiplicity. In this manner, self-assessment expands and adapts to the environment and carries learning forward. Continuity is fundamental to assemblage theory and relates to the temporal aspects of self-assessment and goal setting. The long-term survival of assemblages relies on the shorter duration and rapid expansion of assemblage elements (rhizome compared to a tree). This reveals the capacity of the assemblage to rapidly expand and adapt to its environment. In this study, goals derived from the self-assessments were observed to be almost entirely concerned with proximal goals. Where distal goals were noted they were long-term, limited, and vague. This is in line with Bandura and Schunk (1981) who suggest that clear proximal goals lead to higher performance. They conclude that self-assessment of proximal goals focuses the student who then produces higher performance than students with unclear goals. Nevertheless, this may only hold true for proximal goals and not distal goals.

6. Conclusion

Goal setting is an important part of BPM both of which require metrics against which to measure performance. Correspondingly students, as potential business process analysts, undertaking a BPM course require goal setting competencies. This study set out to

inductively explore what goals are pursued by students with no a-priori training in self-assessment. Two questions guided the research. What goals do students set? and, how do they evaluate the goals that they have set?

The findings reveal that students use combinations of goal types. Two important observations were noted. First, while task goals are important, higher performance was associated with setting goals for effort and understanding in support of the underlying task goal. To be effective goals need not be explicitly stated nor do they need to be defined prior to beginning a task. Implicit goals determined through internal factors or external factors result in higher performance even if they only emerge during the task. Quality as a goal was notable as a special case. Whereas pursuing quality supported other goal types for higher performance, pursued alone quality resulted in lower grades. Second, higher performing students were better at self-assessment than lower performing students. This is considered a function of effort and understanding combined with previous self-assessment experience. In addition, the findings revealed temporal aspects to goal setting, with higher goals being set with longer time-frames. However, goals set at longer time-frames were vague while goals pursued in shorter time-frames provided better outcomes. Outcomes were also more accurately predicted for proximal goals by higher performing students.

Types of goals and temporal levels were shown to be entangled with goal types transcending goal levels. Goal setting provides both motivation and increased self-efficacy but is moderated by lack of motivation and low self-efficacy. This entanglement makes understanding of goal setting problematic. Consequently, assemblage theory was applied to understand emergent properties when setting goals. Assemblage theory posits that everything is an assemblage made up of other assemblages which are combined to create larger assemblages. The properties of the larger assemblages are determined by their environment which combine multiple sub-assemblages by replicating patterns of the sub-assemblages. Each assemblage has multiple connections that continue to exist even when the larger assemblage is broken apart. New connections with emergent characteristics are produced by the ruptured assemblages. From an assemblage perspective goal setting, goals, goal types, goal levels, self-assessment, self-efficacy, and motivation combine in diverse ways to form larger goals that can be replicated to all areas of a person's life.

In sum, goal setting is important for higher performance at least in the short-term. It increases motivation and self-efficacy through accomplishing tasks at a higher level than simply doing one's best. The study observed the importance of effort and understanding goals which were associated with higher performance and superior self-assessment. Task goal types were seen to be fundamental while quality goals supported task, effort, and understanding. Pursuing quality alone however was observed to produce only mediocre results. Consequently, assemblages of goal setting, self-assessment, self-efficacy, effort, understanding, quality and task interact in ways that produce causality through their combinations and not inherently in any one aspect alone.

From a practice aspect, these findings suggest that educators should explicitly motivate students towards goals of effort and understanding while encouraging the longer term goal of understanding. Interventions that provide structured goal setting and self-assessment should be designed into courses. It is the authors' opinion that these findings relate not only to learning in educational settings but may be extended to on-the-job training and even to everyday tasks. Nevertheless, further research is required to validate these assertions.

A limitation to the study was the limited scale of the study with only 10 teams comprising 5 members each in a single assignment. A further limitation is the use of a single University which may result in students being culturally conditioned to perform self-assessments based on their knowledge of the assessment criteria that they have learnt from their instructors (Boud et al., 2013).

Future research is needed to differentiate between self-assessment, higher performance, effort, and understanding. Although combinations of effort and understanding goals appear to improve self-assessment and performance they can also provide a localized system of metrics against which to assess progress. The ability to assess oneself must lead to overall understanding which is useful in all areas of life which takes effort.

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