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The impact of a first-year orientation team building exercise

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Abstract

Experience and anecdotal evidence indicate that first-year students experience challenges in terms of adapting to our university construction management course environment. The purpose of the study is to determine the impact of a team building event on first-year students' skills, core competencies, ability to manage themselves, work as a team, interface with each other, strategize, plan, evolve tactics, and take action.. A quantitative approach using a questionnaire survey in a South African university post completion of the event determined the perceptions of the students. Findings include that the team building activities contributed to enhancing participants' skills, their understanding and appreciation of core competencies and the development thereof, and their ability to communicate with first-year colleagues; built confidence in their abilities including that of completing a task, and enhanced participants' alternative thought processes, ability to be creative, strategize, evolve tactics, take action, and plan. The students benefited from, enjoyed the team building activities and believed that it contributed to improving their time management skills. Based upon the findings, conclusions are that the one-day first-year orientation team-building event had the desired impact in terms of the development of the first-year students' abilities. Recommendations are that the one-day first-year orientation team-building event is staged annually, and a study pertaining to the impact of the intervention on student performance be determined following the completion of a full academic year and again post-graduation.

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Construction management, orientation, students, team building.

Introduction

In recent years, the academic programme within the Nelson Mandela University Department of Construction Management has struggled to engage with new entrant students to prepare them adequately for the rigours of the first year of study as well as the undergraduate programme. In particular, their inability to manage themselves, strategize, plan, evolve tactics, and take action, has marginalised their ability to study, undertake assignments, and projects. These inabilities in turn, have increased failure rates and negatively impacted throughput rates and ultimately, the successful completion of the programme.

Furthermore, a perception has formed, confirmed in forums in which industry liaison interaction takes place, that students attending employment interviews or carrying out holiday employment placements lacked the skills and attributes expected of them to fulfil a management role. This weakness in the way graduates communicated their abilities and applied knowledge gained during their studies, required an intervention at the earliest opportunity in the education process.

Given the aforementioned, and the Department of Construction Management's focus on 'lecturing and learning' research, a survey was conducted among participants of a first-year orientation one-day team building event, styled on the 'Amazing Race' television programme, which was introduced as an intervention to address this at the commencement of the first year of study.

The objectives of the study were to determine the extent to which the team building activities:

- enhanced participants' skills;
- contributed to an improvement in participants' understanding and appreciation of ten core competencies;
- contributed to the development of participants' core competencies;
- impacted on the participants' ability to manage themselves, work as a team, and interface with each other;
- impacted on the participants' ability to strategize, plan, evolve tactics, and take action that would lead to their team winning the 'race', and
- benefited the participants.

The aim of the research being to identify whether the intervention developed confidence in their abilities, enhanced communication amongst them, and provided an opportunity for them to test alternative thought processes, thereby better preparing the students for the challenges of first-year and the undergraduate programme.

Literature review

EMPOWERING THE INDIVIDUAL

As Smallwood (2006) highlighted, "Construction management programmes need to empower graduates to manage the business of construction and projects" which requires that

the learning environment develops their ability to manage themselves, work as a team, and interface with each other. In addition, their ability to strategize, plan, evolve tactics, and take action in the course of this learning, identify critical learning practices that will manifest itself in their ability to perform in the workplace, a necessity particularly within the global construction sector, where skills are in short supply (Turner and Townsend, 2017).

Experience and anecdotal evidence in the form of random classroom surveys indicate that undergraduate students encounter challenges in terms of completing the academic programme within the allocated study time. As this reflects '*procedural knowledge*' (Marzano, 2010), it highlights a need to foster greater understanding of the importance of improved 'practice' to be work ready. Work ready graduates make positive contributions to the industries within which they work (Borg, Turner and Scott-Young, 2018), and thus developing the confidence of students to enter the workplace becomes an important function of university education. Confidence evolves from a better understanding of the work environment, and this is partly a result of a student's life experiences and competency of the tasks and activities within that realm. This exposes traditional pedagogy and teaching to critical questioning, with the focus on intellectual critiques not helping students to cope with everyday realities, responding, and learning, that are the essence of practice (Cunliffe, 1999).

Competency embodies the capacity to transfer skills and abilities from one area to another, and competencies are the characteristics of managers that lead to the demonstration of skills and abilities (Smallwood and Emuze, 2011). An inability to master these competencies sufficiently whilst within the higher education domain, through vacation work or practical skills learning undermines the confidence of students to be able to perform within the work environment (Jackson, 2015). However, as Kamardeen (2013) notes, confidence is also accomplished by helping students establish positive expectancies for success, which means exploring practices that increase interface time with one another, and explore other boundaries outside the current teaching and learning environment, thus providing opportunities to tackle any deficiencies. An aspect to this is an understanding of the challenge of managing others in the field and applying those concepts learned in the classroom (Farrow, 2016), which requires that students be exposed to the management of others whilst in higher education, which may be enhanced by team building exercises.

Jackson (2015) states that "it is important to be refining, developing and practicing your skills, not simply starting to learn them", which further emphasises the need to get students out of the classroom and into a pseudo work environment. There is also an idea that all millennial students need active learning (Farrow, 2016) as they have become less exposed to workplace environments and participation in physical labour activities. By enhancing these through the types of activities included in a team-building event, construction management programmes are improving graduates' suitability for appropriate employment. This is in addition to students attempting to gain experience through vacation work, which is undermined by a lack of practical skills.

Furthermore, the dramatic changes in social, economic, and environmental issues experienced since the turn of the millennium has forced construction management programmes to produce more prepared personnel (Lee et al., 2011). Simply put, students need to be able to think critically and solve problems effectively. Merely having knowledge or information is not enough (Snyder and Snyder, 2008).

In addition, as the Enhancing Student Employability Co-ordination Team (ESECT) at the Higher Education Academy argue, to enhance employability, it is necessary to ensure that

practices that foster understanding, skills, efficacy, beliefs and metacognition (appropriate personal manner) are employed in higher education programmes (Yorke and Knight, 2007). Relevant course materials that demonstrate applications of theories to real world issues (Kamardeen, 2013) need to be included within the curriculum.

LEARNING IN CONTEXT

When addressing inadequacies of both students and programmes, it is important to understand what they will be expected to deal with when they enter the workplace. "Students with a science background are more likely to emphasize operation learning while those coming from arts tend to emphasize comprehension learning." (Warburton, 2003) However, Construction Management students need an education 'that balances operation and comprehension learning' as they in essence need to straddle these different spheres of learning to be able to manage a project team who may incorporate professionals from both spheres of learning.

The nine recognised functions in an organisation, and five functions of management work, provide further insight relative to the knowledge and skills required by construction managers (Smallwood, 2006). However, this only introduces the theoretical challenges of the discipline and not the practices as experienced in the field. As Hmelo-Silver, Duncan and Chin (2007) state: "learning the concepts and theories of a discipline is best situated in the context of the practices of that discipline". This is exacerbated by the students generally not having experienced an environment where they can relate theory to practice, which has led to an increased need to engage with students on site visits, as "curricula must support student learning and personal development through providing a meaningful and motivational context." (Edstrom, 2012)

However, the management of either the business of construction or construction projects requires an appreciable amount of 'competence' and 'competency' as they are prerequisites for the attainment of the envisaged performance (Sanghi, 2004; Mooney, 2007). A core competence is thus an organisational capability to perform some aspect of a production function in a manner consistently superior to its competition that in turn leads to above-average organisational performance (Clardy, 2007). According to Clardy (2007), core competencies lead to persistent superior performance in several ways as they generate more efficient and effective performance that allow firms to adapt better changing conditions by providing a platform for continuous innovation in products and services. In this context, competence means a skill and the standard of performance reached while competency refers to the behaviour by which it is achieved. In other words, competences refer to the range of skills which are satisfactorily performed, while competencies refer to the behaviour adopted in competent performance. Further, Sanghi (2004), and Vazirani (2010) suggest that competencies are divided into two categories: the surface, which are required to be at least effective, and core, which distinguishes superior performance from average performance.

The surface competencies are:

- Knowledge: information regarding content, and
- Skills: ability to perform a task.

The core competencies are:

- Self-concept: values, aptitude, attitude, and self-image;
- Traits: self-confidence, team player, and handles ambiguity, and
- Motives: focus on client success and preserves organisation / personal integrity.

Knowledge, skills, traits, and motives are characteristics that may not be easily observable, but rather exist 'under the surface', though it should be noted that knowledge and skill competencies tend to be visible and relatively 'on the surface', however, self-concept, trait and motives competencies are more hidden and central to personality (Sanghi 2004; Vazirani 2010).

In addressing specific core competencies, based upon their contribution to project success relative to their importance, it can be concluded that aptitude, attitude, team player, focus are critical core competencies to client success (Smallwood and Emuze, 2011). Envisaging an environment outside the classroom with a unique set of physical and mental challenges to enhance these competencies becomes a strategy to introduce construction management students to a collaborative problem-solving environment. This, whilst also enhancing their ability to strategize, plan, evolve tactics, and act within a practical environment in which actions result in consequences for them and teammates, a pseudo project environment.

Mo, Dainty and Price (2007) emphasise that skills include an ability to think across disciplines, team working, and social and environmental awareness. Learning this in the traditional classroom environment is challenging, not least due to students being unable to articulate their thoughts, nor communicate with their lecturers or one another, and an overreliance on smart phones as the only source of information coupled with an inability to read and discuss the findings of their investigations with their peers. Students, in general, find it challenging to communicate and work in a team particularly in the early years of their studies (Bogdanović, Austin and Bibbings, 2016).

The survival of any organised human activity depends largely on a person's ability to communicate with others (Zulch, 2016). In construction, due to the fragmented make-up of project teams and adversarial nature of the business, communication is a critical component to keeping 'cooperation in an organisation' (Martin, 2007). Business employees need to communicate effectively, get along well with their co-workers, embrace teamwork, take initiative, have high work ethic, and portray professionalism (Robles, 2012). In particular, decision-making and problem solving are core communication skills that a manager needs in order to make a well-informed decision (Zulch, 2016), skills which first-year students require to manage themselves in order to complete their studies.

DEVELOPING SOFT SKILLS

Skills are the ability to translate knowledge into an action that results in the desired performance (Zulch, 2016). Employers identified problem-solving skills (e.g. critical thinking skills) as an important factor when assessing new graduates' employability (Finch et al., 2013). Problem solving incorporates a range of competencies including critical thinking skills, creativity, leadership skills, and adaptability. To be effective in the workplace, and in their personal lives, students must be able to solve problems to make effective decisions, therefore, they must be able to think critically (Snyder and Snyder, 2008).

Business educators need to understand the importance of interpersonal skills including communication, integrity, and courtesy for their students and include soft skills in their curriculum (Robles, 2012). Some of these skills include effective communication, adaptability, time management and interpersonal skills (Cavanagh et al., 2015) as well as being independent, able to manage and lead others (Dacre Pool and Sewell, 2007). It is these soft skills that enhance students' ability to strategize, plan, evolve tactics, and act, which in turn contributes to their ability to study, undertake assignments, and projects. In addition, as already

highlighted, effective student learning occurs when instructional models incorporate social and psychological dimensions in the design of curriculums (Kamardeen, 2013).

Employers value skills that transcend specific roles and occupations (Finch et al., 2013). Current and future business leaders are emphasising the development of soft skills (Nealy, 2005) as these skills are critical for productive performance in today's workplace (Robles, 2012). These skills are at the very core of the challenges that students face in their first year when competing deadlines will test their ability to manage their time and themselves to achieve an effective outcome across all subjects, a skill they may not have acquired during their school careers (Chidzonga, 2014). Universities must therefore emphasise the development of soft-skills within all their programmes, as soft skills are more highly valued than an academic qualification by many employers (Finch et al., 2013), and soft skills and behaviours have been increasingly recognised as contributing to the attainment of work readiness (Borg, Turner and Scott-Young, 2018).

Research

RESEARCH METHOD AND SAMPLE STRATUM

Given the challenges recorded in the introduction, the department arranged a team-building event involving the first-year students at a resort near to the university during orientation week. The event entailed seven activities, namely hoop, blindfold object hunt, hike, puzzle, letter matrix, three stick triangle, and conveying of a golf ball. Each of the activities entailed one or more of the following: strategizing; planning; evolving of tactics and taking of action.

The researchers employed a quantitative approach using a self-administered questionnaire to determine the students' perceptions with respect to the intervention. Only a post-test survey was administered the rationale being that this was a preliminary investigation of a problem and that a longer longitudinal study would enable the full impact of the intervention on completion rates. Previous research in industry liaison groups had further identified that school going students knew very little about the skills and attributes needed for the role they were studying towards when entering university, thus conducting pre and post questionnaires would provide little value in understanding the failure to perform. Furthermore, all first-year students had already had to perform to a high level just to make it onto the course. Mertler (2016) cautions that a 'one-shot case' quantitative study, where "a single group is exposed to a treatment condition and then post-tested" does not do "a very good job of controlling for extraneous variables and should be avoided". The researchers are aware of the limitations of using only a post-test, but would argue that the controlled nature of the experiment means no extraneous variables would come into effect until some time had passed and that this would be the subject of later research. Therefore, the questionnaire is in effect the pre-test in a quasi-experimental pre-test post-test control group.

All twenty-one students from the first-year cohort who could attend the team-building event completed the questionnaire a few weeks after the event. The questionnaire consisted of thirteen questions, twelve closed ended, using either a five-point or a six-point Likert scale. A measure of central tendency in the form of a mean score (MS) between 1.00 and 5.00 (five-point), and 0.00 and 5.00 (six-point) was computed based upon the percentage responses to the points on the respective scales to enable interpretation of the responses and to rank variables where necessary. Weighting of responses is as per the figures recorded within parentheses: did not (0); minor extent (1); near minor extent (2); some extent (3); near major extent (4), and major extent (5). given.

RESEARCH FINDINGS

Table 1 indicates the extent to which the team building activities enhanced seventeen skills in terms of percentage responses to a scale of 1 (minor) to 5 (major), an additional sixth point 'did not', and MSs between 0.00 and 5.00, the midpoint being 2.50. The skills were identified from a total of forty-two skills identified relative to the practice of construction management (Smallwood, 2006). It is notable that all the MSs are > 2.50, which indicates that in general the team building activities contributed more of a major than a minor extent to an enhancement in participants' skills.

It is notable that no MSs > 4.17 ≤ 5.00, which would indicate the team building activities enhanced the related skills between a near major extent to a major extent / major extent. 12 / 17 (70.6%) MSs > 3.34 ≤ 4.17, which indicates the team building activities enhanced the related skills between some extent to a near major / near major extent. Team building, the primary objective of the event, predominates and is ranked first, followed by a cluster ranked second to fourth – organising, motivating, and communicating - oral. These are skills that are required to optimise performance relative to the event. These are followed by those skills ranked fifth to twelfth – coordinating, persuading, planning, leading, controlling, leadership, decision making, and procedures development. Coordinating, planning, controlling, and decision making are further skills required to optimise performance relative to the event.

The skills (29.4%) ranked thirteenth to seventeenth have MSs > 2.50 ≤ 3.34, which indicates the team building activities enhanced the related skills between a near minor and some extent / some extent – interpersonal, negotiating, supervisory, technical, and initiating.

Table 1 Extent to which the team building activities enhanced participants' skills.

Skill	Response (%)							MS	Rank
	U	Did not	Minor .....Major						
			1	2	3	4	5		
Team building	0.0	0.0	0.0	0.0	23.8	42.9	33.3	4.10	1
Organising	0.0	0.0	0.0	4.8	28.6	38.1	28.6	3.90	2
Motivating	4.8	0.0	0.0	0.0	28.6	33.3	33.3	3.86	3
Communicating - oral	0.0	0.0	0.0	9.5	28.6	33.3	28.6	3.81	4
Coordinating	5.3	0.0	0.0	0.0	31.6	36.8	26.3	3.74	5
Persuading	0.0	0.0	4.8	0.0	33.3	42.9	19.0	3.71	6
Planning	0.0	0.0	0.0	9.5	23.8	57.1	9.5	3.67	7
Leading	0.0	0.0	4.8	0.0	38.1	42.9	14.3	3.62	8
Controlling	4.8	0.0	0.0	9.5	19.0	47.6	19.0	3.62	9
Leadership	0.0	0.0	0.0	5.0	40.0	50.0	5.0	3.55	10
Decision making	0.0	4.8	0.0	9.5	33.3	33.3	19.0	3.48	11
Procedures development	4.8	4.8	0.0	0.0	23.8	57.1	9.5	3.48	12
Interpersonal	4.8	0.0	0.0	14.3	33.3	38.1	9.5	3.29	13
Negotiating	9.5	0.0	4.8	4.8	28.6	33.3	19.0	3.29	14

Table 1 continued

Skill	Response (%)							MS	Rank
	U	Did not	Minor .....Major						
			1	2	3	4	5		
Supervisory	0.0	5.0	0.0	5.0	55.0	25.0	10.0	3.25	15
Technical	9.5	0.0	4.8	19.0	9.5	42.9	14.3	3.14	16
Initiating	9.5	0.0	4.8	0.0	42.9	38.1	4.8	3.10	17

Table 2 indicates the extent to which the team building activities contributed to an improvement in participants' understanding and appreciation of ten core competencies. Mean MSs based upon the MSs of the three sub-categories of core competencies are also presented. Given that there are effectively six points on the scale, the MSs are between 0.00 and 5.00, the midpoint being 2.50.

It is notable that all the MSs are > 2.50, which indicates that in general the team building activities made more of a major than a minor contribution to an improvement in participants' understanding and appreciation of the ten core competencies. However, a review of the MSs in terms of ranges provides a more detailed perspective.

It is notable that no core competency has a MS > 4.17 ≤ 5.00 – made between a near major to major / major contribution to an improvement.

7 / 10 (70.0%) MSs are > 3.34 ≤ 4.17, which indicates the activities made between a contribution to a near major contribution / near major contribution - team player, attitude, preservation of team integrity, preservation of personal integrity, focus on success, self-confidence, and self-image.

3 / 10 (30.0%) MSs are > 2.50 ≤ 3.34, which indicates the activities made between a near minor contribution to a contribution / contribution - handle ambiguity, values, and aptitude.

It is notable that within two categories, the top ranked core competency predominates - attitude (self-concept), team player (traits), and focus on success (motives).

In terms of categories of core competencies, motives (MS = 3.76) is ranked first followed by traits (MS = 3.59), and self-concept (3.39).

Table 2 Extent to which the team building activities contributed to an improvement in participants' understanding and appreciation of ten core competencies.

Core competency	Response (%)							MS	Rank	Rank over-all
	U	Did not	Minor .....Major							
			1	2	3	4	5			
Self-concept:								3.39		3
• Attitude	0.0	0.0	0.0	4.8	23.8	42.9	28.6	3.95	1	2
• Self-image	4.8	4.8	4.8	4.8	14.3	52.4	14.3	3.38	2	7
• Values	0.0	9.5	0.0	4.8	38.1	33.3	14.3	3.29	3	9
• Aptitude	19.0	0.0	0.0	4.8	38.1	19.0	19.0	2.95	4	10

Table 2 continued

Core competency	Response (%)							MS	Rank	Rank over-all
	U	Did not	Minor .....Major							
			1	2	3	4	5			
Traits:								3.59		2
• Team player	0.0	0.0	0.0	4.8	14.3	61.9	19.0	3.95	1	1
• Self-confidence	0.0	4.8	0.0	0.0	52.4	19.0	23.8	3.52	2	6
• Handle ambiguity	10.0	0.0	0.0	5.0	30.0	45.0	10.0	3.30	3	8
Motives:								3.76		1
• Preservation of team integrity	0.0	0.0	0.0	4.8	23.8	47.6	23.8	3.90	1	3
• Preservation of personal integrity	0.0	0.0	0.0	0.0	28.6	57.1	14.3	3.86	2	4
• Focus on success	4.8	0.0	0.0	0.0	42.9	38.1	14.3	3.52	3	5

Table 3 indicates the extent to which the team building activities contributed to the development of participants' core competencies in terms of percentage responses to a scale of 1 (minor) to 5 (major), an additional point 'did not', and MSs. Mean MSs based upon the MSs of the three sub-categories of core competencies are also presented. It is notable that all the MSs are > 2.50, which indicates that in general the team building activities made more of a major than a minor contribution to the development of participants' core competencies.

It is notable that no core competency has a MS > 4.17 ≤ 5.00 – near major to major / major contribution to development.

8 / 10 (80.0%) MSs are > 3.34 ≤ 4.17, which indicates that the activities made between a contribution to a near major contribution / near major contribution to the development of participants' core competencies: three self-concept, namely attitude, self-image, and values; two traits, namely team player, and handle ambiguity, and all three motives, namely preservation of team integrity, focus on success, and preservation of personal integrity.

The other 2 / 10 (20.0%) MSs are > 2.50 ≤ 3.34, which indicates the activities made between a near minor contribution to a contribution / contribution – aptitude, and self-confidence, although the former's MS is marginally below the lower limit of the upper range, namely 3.30.

In terms of categories of core competencies, motives (MS = 3.63) is ranked first followed by self-concept (3.60), and traits (3.57). It is notable that there is an absolute difference of 0.06 between the means of the highest and lowest categories of core competencies.

Table 3 Extent to which the team building activities contributed to the development of participants' core competencies.

Core competency	Response (%)							MS	Rank	Rank over-all
	U	Did not	Minor .....Major							
			1	2	3	4	5			
Self-concept:								3.60		2
Attitude	0.0	0.0	0.0	0.0	25.0	55.0	20.0	3.95	1	2
Self-image	0.0	5.0	0.0	5.0	25.0	45.0	20.0	3.65	2	5
Values	5.0	5.0	0.0	0.0	25.0	50.0	15.0	3.50	3	8
Aptitude	5.0	10.0	0.0	0.0	25.0	45.0	15.0	3.30	4	9
Traits:								3.57		3
Team player	0.0	0.0	0.0	0.0	15.0	65.0	20.0	4.05	1	1
Handle ambiguity	0.0	5.0	0.0	0.0	45.0	35.0	15.0	3.50	2	7
Self-confidence	5.0	5.0	0.0	0.0	55.0	25.0	10.0	3.15	3	10
Motives:								3.63		1
Preservation of team integrity	5.0	0.0	0.0	0.0	30.0	50.0	15.0	3.65	1	3
Focus on success	0.0	5.0	0.0	0.0	35.0	40.0	20.0	3.65	2	4
Preservation of personal integrity	0.0	0.0	0.0	5.0	40.0	45.0	10.0	3.60	3	6

Table 4 indicates the extent to which the team building activities impacted on participants in terms of percentage responses to a scale of 1 (minor) to 5 (major), an additional point 'did not', and MSs. Given that there are effectively six points on the scale, the MSs are between 0.00 and 5.00, the midpoint being 2.50. It is notable that all the MSs are > 2.50, which indicates that in general the team building activities impacted more of a major than a minor extent on participants. However, a review of the MSs in terms of ranges provides a more detailed perspective. It is notable that no MSs are > 4.17 ≤ 5.00, which would have indicated the impact could have been between a near major extent to a major / major extent. 6 / 7 (85.7%) MSs are > 3.34 ≤ 4.17, which indicates the impact is between some extent to a near major extent / near major extent: your ability to communicate with your 1st year colleagues; building confidence in your own abilities; your ability to complete a task; enhancing alternative thought processes; your ability to be creative, and improving your time management skills. Only 1 / 7 MSs is > 2.50 ≤ 3.34, which indicates the impact is between a near minor extent to some extent / some extent - removing you from your 'comfort zone'.

Table 4 Extent to which the team building activities impacted on participants

Impact	Response (%)							MS	Rank
	U	Did not	Minor .....Major						
			1	2	3	4	5		
Your ability to communicate with your 1st year colleagues	0.0	0.0	0.0	0.0	23.8	52.4	23.8	4.00	1
Building confidence in your own abilities	0.0	0.0	0.0	5.0	25.0	35.0	35.0	4.00	2
Your ability to complete a task	0.0	0.0	0.0	0.0	28.6	47.6	23.8	3.95	3

Table 4 continued

Impact	Response (%)							MS	Rank
	U	Did not	Minor .....Major						
			1	2	3	4	5		
Enhancing alternative thought processes	0.0	0.0	0.0	4.8	23.8	52.4	19.0	3.86	4
Your ability to be creative	0.0	0.0	0.0	9.5	28.6	47.6	14.3	3.67	5
Improving your time management skills	0.0	4.8	0.0	9.5	28.6	38.1	19.0	3.52	6
Removing you from your 'comfort zone'	0.0	4.8	0.0	19.0	23.8	38.1	14.3	3.33	7

Table 5 indicates the extent to which the team building activities enhanced participants' various abilities in terms of percentage responses to a scale of 1 (minor) to 5 (major), an additional point 'did not', and MSs. It is notable that all the MSs are > 2.50, which indicates that in general the team building activities enhanced participants' various abilities more of a major than a minor extent. It is notable that no MSs are > 4.17 ≤ 5.00 - enhancement is between a near major extent to a major extent / major extent. All the MSs are > 3.34 ≤ 4.17, which indicates the enhancement is between some extent to a near major extent / near major extent.

Table 5 Extent to which the team building activities enhanced participants' various abilities.

Ability	Response (%)							MS	Rank
	U	Did not	Minor .....Major						
			1	2	3	4	5		
Strategize	0.0	5.0	0.0	0.0	25.0	35.0	35.0	3.90	1
Plan	0.0	0.0	0.0	5.0	25.0	50.0	20.0	3.85	2
Take action	0.0	5.0	0.0	5.0	30.0	30.0	30.0	3.70	3
Evolve tactics	5.0	5.0	0.0	5.0	30.0	35.0	20.0	3.40	4

Respondents were then required to indicate the extent to which the individual team building activities enhanced participants' ability to strategize, evolve tactics, take action, and plan relative to each activity.

Table 6 indicates the extent to which the team building activities enhanced participants' ability to strategize. It is notable that all the MSs are > 3.00, which indicates that in general the team building activities enhanced participants' ability to strategize to a major as opposed to a minor extent. It is notable that no MSs are > 4.20 ≤ 5.00 - enhancement is between a near major extent to a major extent / major extent. All the MSs are > 3.40 ≤ 4.20, which indicates the enhancement is between some extent to a near major extent / near major extent. The blindfold object hunt, hike, and conveying of golf ball activities predominate.

Table 6 Extent to which the team building activities enhanced participants' ability to strategize.

Activity	Response (%)						MS	Rank
	U	Minor .....Major						
		1	2	3	4	5		
Blindfold object hunt	0.0	0.0	0.0	33.3	42.9	23.8	3.90	1
Hike	0.0	0.0	4.8	23.8	52.4	19.0	3.86	2
Conveying of golf ball	4.8	0.0	0.0	23.8	42.9	28.6	3.86	3
Puzzle	0.0	0.0	0.0	42.9	42.9	14.3	3.71	4
3 Stick triangles	9.5	0.0	0.0	19.0	47.6	23.8	3.67	5
Letter matrix	4.8	0.0	0.0	33.3	47.6	14.3	3.62	6
Hoop	9.5	0.0	0.0	19.0	61.9	9.5	3.52	7

Table 7 indicates the extent to which the team building activities enhanced participants' ability to plan. It is notable that all the MSs are > 3.00, which indicates that in general the team building activities enhanced participants' ability to plan to a major as opposed to a minor extent. It is notable that no MSs > 4.20 ≤ 5.00 - enhancement is between a near major extent to a major extent / major extent. 5 / 7 (71.4%) of the MSs are > 3.40 ≤ 4.20, which indicates the enhancement is between some extent to a near major extent / near major extent. The hike, conveying of golf ball, puzzle, blindfold object hunt, and 3 Stick triangles predominate. 2 / 7 (28.6%) of the MSs are > 2.60 ≤ 3.40, which indicates the enhancement is between a near minor extent to some extent / some extent.

Table 7 Extent to which the team building activities enhanced participants' ability to plan.

Activity	Response (%)						MS	Rank
	U	Minor .....Major						
		1	2	3	4	5		
Hike	5.6	0.0	5.6	11.1	55.6	22.2	3.78	1
Conveying of golf ball	5.0	0.0	5.0	25.0	35.0	30.0	3.75	2
Puzzle	0.0	5.0	0.0	30.0	45.0	20.0	3.75	3
Blindfold object hunt	5.0	5.0	0.0	20.0	45.0	25.0	3.70	4
3 Stick triangles	5.0	0.0	5.0	20.0	55.0	15.0	3.65	5
Letter matrix	5.3	0.0	10.5	26.3	52.6	5.3	3.37	6
Hoop	5.3	5.3	10.5	26.3	47.4	5.3	3.21	7

Table 8 indicates the extent to which the team building activities enhanced participants' ability to evolve tactics. It is notable that all the MSs are > 3.00, which indicates that in general the team building activities enhanced participants' ability to evolve tactics to a major as opposed to a minor extent. It is notable that no MSs are > 4.20 ≤ 5.00 - enhancement is between a near major extent to a major extent / major extent. 6 / 7 (85.7%) of the MSs are > 3.40 ≤ 4.20,

which indicates the enhancement is between some extent to a near major extent / near major extent. Although hike is ranked first, there is a minor difference of 0.15 in MS between it and sixth ranked conveying of golf ball. Last ranked hoop has a MS >2.60 ≤ 3.40, which indicates the enhancement is between a near minor extent to some extent / some extent.

Table 8 Extent to which the team building activities enhanced participants' ability to evolve tactics.

Activity	Response (%)						MS	Rank
	U	Minor .....Major						
		1	2	3	4	5		
Hike	5.0	0.0	5.0	25.0	35.0	30.0	3.75	1
3 Stick triangles	5.0	0.0	0.0	20.0	65.0	10.0	3.70	2
Puzzle	5.0	0.0	5.0	20.0	50.0	20.0	3.70	3
Letter matrix	5.3	0.0	0.0	31.6	42.1	21.1	3.68	4
Blindfold object hunt	5.0	0.0	0.0	40.0	30.0	25.0	3.65	5
Conveying of golf ball	5.0	0.0	5.0	25.0	50.0	15.0	3.60	6
Hoop	5.0	0.0	10.0	30.0	50.0	5.0	3.35	7

Table 9 indicates the extent to which the team building activities enhanced participants' ability to take action. It is notable that all the MSs are > 3.00, which indicates that in general the team building activities enhanced participants' ability to take action to a major as opposed to a minor extent. It is notable that no MSs are > 4.20 ≤ 5.00 - enhancement is between a near major extent to a major extent / major extent. All the MSs are > 3.40 ≤ 4.20, which indicates the enhancement is between some extent to a near major extent / near major extent. Although puzzle is ranked first, there is a minor difference of 0.14 in MS between it and seventh ranked letter matrix.

Table 9 Extent to which the team building activities enhanced participants' ability to take action.

Activity	Response (%)						MS	Rank
	U	Minor .....Major						
		1	2	3	4	5		
Puzzle	0.0	0.0	4.8	19.0	47.6	28.6	4.00	1
Conveying of golf ball	0.0	0.0	4.8	19.0	52.4	23.8	3.95	2
3 Stick triangles	0.0	0.0	0.0	28.6	52.4	19.0	3.90	3
Hoop	0.0	0.0	4.8	23.8	47.6	23.8	3.90	4
Hike	0.0	0.0	4.8	28.6	38.1	28.6	3.90	5
Blindfold object hunt	0.0	0.0	4.8	33.3	28.6	33.3	3.90	6
Letter matrix	0.0	0.0	4.8	33.3	33.3	28.6	3.86	7

Table 10 provides a summary of the extent to which all the activities enhanced the four abilities of participants based upon the extent to which the individual team building activities enhanced participants' ability to strategize, evolve tactics, take action, and plan, in terms of MSs and ranks. In terms of the enhancement of all seven abilities (mean MS), hike (MS = 3.82) was ranked first, followed closely and jointly by blindfold object hunt, puzzle, and conveying of golf ball (MS = 3.79), 3 stick triangles (MS = 3.73), letter matrix (MS = 3.63), and hoop (MS = 3.50). It is notable that there is only a MS difference of 0.09 between the first and fifth ranked mean MSs. Then, in terms of the mean MS / ability, take action (MS = 3.93) is ranked first, followed by strategize (MS = 3.69), and then jointly by plan, and evolve tactics (MS = 3.48). The overall mean MS is 3.64 (> 3.40 ≤ 4.20) - the enhancement is between some extent to a near major extent / near major extent.

Table 10 Summary of the extent to which all the activities enhanced the four abilities of participants.

Activity	Ability									
	Strategize		Plan		Evolve tactics		Take action		Mean	
	MS	Rank	MS	Rank	MS	Rank	MS	Rank	MS	Rank
Hike	3.86	2	3.78	1	3.75	1	3.90	5	3.82	1
Blindfold object hunt	3.90	1	3.70	4	3.65	5	3.90	6	3.79	2=
Puzzle	3.71	4	3.75	3	3.70	3	4.00	1	3.79	2=
Conveying of golf ball	3.86	3	3.75	2	3.60	6	3.95	2	3.79	2=
3 Stick triangles	3.67	5	3.65	5	3.70	2	3.90	3	3.73	5
Letter matrix	3.62	6	3.37	6	3.68	4	3.86	7	3.63	6
Hoop	3.52	7	3.21	7	3.35	7	3.90	4	3.50	7
Mean	3.69		3.48		3.48		3.93		3.64	

Respondents were required to indicate the extent to which they enjoyed and benefited from the team building activities. The MS (4.29) of enjoyed is > 4.17 ≤ 5.00, which indicates that the enjoyment is between a near major extent to a major extent / major extent, whereas the MS (4.00) of benefited from is > 3.34 ≤ 4.17, which indicates that the benefit is between some extent to a near major extent / a near major extent.

Table 11 indicates the extent to which participants benefited from the team building activities. It is notable that all the MSs are > 3.00, which indicates that in general the participants benefited from the team building activities to a major as opposed to a minor extent. 6 / 7 (85.7%) MSs > 3.40 ≤ 4.20, which indicates the benefit is between some extent to a near major extent / near major extent. Hike ranked first, followed by conveying of golf ball, and jointly by puzzle, and blindfold object hunt, predominate. Last ranked hoop has a MS on the lower end of the aforementioned range and therefore falls within the lower range.

Table 11 Extent to which participants benefited from the team building activities.

Activity	Response (%)						MS	Rank
	U	Minor .....Major						
		1	2	3	4	5		
Hike	0.0	0.0	0.0	25.0	50.0	25.0	4.00	1
Conveying of golf ball	0.0	0.0	0.0	26.3	57.9	15.8	3.89	2
Puzzle	0.0	0.0	0.0	40.0	40.0	20.0	3.80	3
Blindfold object hunt	0.0	0.0	5.0	40.0	25.0	30.0	3.80	4
Letter matrix	5.3	0.0	0.0	42.1	42.1	10.5	3.47	5
3 Stick triangles	5.0	0.0	0.0	40.0	50.0	5.0	3.45	6
Hoop	5.0	0.0	15.0	25.0	40.0	15.0	3.40	7

Discussion

The findings indicate that the team building activities enhanced seventeen skills, contributed to an improvement in participants' understanding and appreciation of ten core competencies, developed the ten core competencies, and specifically their ability to strategize, plan, take action, and evolve tactics.

It is notable that relative to the seventeen skills the enhancement was between some extent to a near major / near major extent in the case of twelve (70.6%), which included the key skills in the form of team building, organising, motivating, oral communicating, coordinating, persuading, planning, leading, controlling, leadership, and decision making. This was an objective of the team building event.

Given that the performance of practitioners and students is affected by the extent to which core competencies manifest themselves, and differentiate between average and above average performance, it is notable that the team building event made between a contribution to a near major contribution / near major contribution to participants' understanding and appreciation of seven (70%) core competencies - team player, attitude, and preservation of team integrity predominate. This was an objective of the team building event, especially team player, and preservation of team integrity, both being extremely important in terms of the first year of study as ideally students should assist and provide each other with moral support. Furthermore, the contribution relative to the remaining three (30%) was between a near minor contribution to a contribution / contribution.

In terms of the development of participants' core competencies, the team building event made between a contribution to a near major contribution / near major contribution - team player, attitude, and preservation of team integrity predominate. This is in alignment with the findings in the literature, especially that of Hmelo-Silver, Duncan and Chin (2007) and the PBL approach.

The team building activities enhanced the following aspects relative to participants between some extent to a near major extent / near major extent in 6 / 7 (85.7%) cases: the ability to communicate with their first- year colleagues; confidence in their own abilities; their ability to complete a task; alternative thought processes; their ability to be creative, and time

management skills. Removing them from their 'comfort zone' featured on the lower limit of this range. This was an objective of the team building event.

In terms of the mean impact of the seven team building activities, the enhancement of the participants' ability to strategize, plan, evolve tactics, and take action is between some extent to a near major extent / near major extent. This is underscored by the participants having benefited between some extent to a near major extent / near major extent from the team building activities in 6 / 7 (85.7%) cases. This too was an objective of the team building event.

Conclusion

Non-traditional academic programme interventions, such as the team-building event, do impact on first-year students' ability, to manage themselves, strategize, plan, evolve tactics, and take action, which in turn should contribute to their ability to study, undertake assignments, projects, and successfully complete the undergraduate programme, although this can only be quantified on completion of a full academic year. In addition, the activities developed confidence in their abilities, enhanced communication amongst them and provided an opportunity for them to test alternative thought processes. The impact should contribute to their ability to respond during employment interviews, effectively integrate into the construction industry upon employment, and to fulfil a form of management function in the industry.

Recommendations

It is thus recommended that the team building event be undertaken on an annual basis, with the impact thereof on participants to be determined following the completion of a full academic year and again post-graduation. Further potential events directed at enhancing students' abilities and increasing confidence in their abilities, as well as providing them opportunities to test alternative thought processes, should be investigated. In addition, the results from this study will be used to enhance the intervention in future years including 'tweaking' events to better align to students' areas of concern as detailed in the comments provided. Scrutiny of the reasons why certain activities scored higher than others will form the basis of further research.

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