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Developing soft skills (also known as pervasive skills)
Usefulness of an educational game

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Abstract

Purpose – The purpose of this paper is to evaluate the usefulness of an educational game to develop soft skills (also known as pervasive skills), from the perspectives of three groups of role-players (student participants, student committee members and employer companies). The game was designed to provide students with the opportunity to develop soft skills and to determine whether students applied the pervasive skills required by the South African Institute of Chartered Accountants.

Design/methodology/approach – Action research was conducted according to a parallel convergent mixed-method research design. Both qualitative and quantitative data were gathered using questionnaires and focus group interviews to determine the usefulness of the educational game.

Findings – All three groups perceived the educational game to be effective in requiring students to apply the full spectrum of soft/pervasive skills. Although all the pervasive skills were perceived to be present in the game, teamwork, communication (listening and verbal) and time management skills were perceived to be most prominent, while written communication, professionalism and ethical awareness were found to be less prominent. Overall, this game can be recommended as an effective and innovative teaching method that can positively contribute to the pervasive skills development of accounting students.

Originality/value – The need to deliver well-rounded accounting graduates demonstrating core technical and soft skills (or pervasive skills and competencies) calls for new and innovative teaching methods. Accounting educators and programmes are continuously challenged regarding which methods to apply to meet these outcomes and substantiate their usefulness.

Keywords Perceptions, Action research, Accounting education, Usefulness, Pervasive skills, SAICA competency framework, Tax intervention, Teaching innovation

Paper type Research paper

1. Introduction

In the twenty-first century, ever-increasing emphasis is being placed on soft skills in the workplace, as well as on the role that education plays in developing soft skills (Kyllonen, 2013). Many studies have confirmed the association between career success and

transferable generic skills (Gammie *et al.*, 2002; Hutchinson and Fleischman, 2003; Mohamed and Lashine, 2003; Hassall *et al.*, 2005). Robles (2012) concurs by stating that technical skills and knowledge account for about 15 per cent of success in the workplace, while 85 per cent is based on soft skills.

However, there is growing consensus among accounting professionals that graduates do not meet the standards of potential employers in the globalised business environment (Van der Merwe, 2013). According to Bierstaker *et al.* (2004), professional body accreditation of the accounting curriculum does not guarantee professional readiness. In addition to sound technical knowledge, accounting graduates are required to possess an ever-broadening range of people skills, business acumen and leadership skills to maintain their preparedness for the increasingly unpredictable demands of the business world (Russell *et al.*, 2000; Barac, 2009; Webb *et al.*, 2009; Paisey and Paisey, 2010; Sin *et al.*, 2012; Barac and Du Plessis, 2014; CIMA, 2014).

Professional accountancy bodies around the world have moved away from a purely knowledge-based accreditation process for new members to include specific additional skills and competencies to be acquired before registering as a professional accountant (Steenkamp, 2012). In South Africa, the South African Institute of Chartered Accountants (SAICA) is responsible for the regulation and standard setting of requirements for obtaining the Chartered Accountant (CA(SA)) designation. Apart from their examinable pronouncements (a detailed syllabus of topics and technical knowledge to be acquired by students in the academic programme), SAICA (2014) developed their competency framework detailing the skills and competencies a CA(SA) should possess when entering the profession. In terms of this framework for the CA(SA) programme, providers of the academic programme (i.e. SAICA-accredited universities[1]) are expected to address all appropriate professional skills in their programme which include the exposure of candidates to the development of soft skills (referred to in the framework, and also in this paper, as pervasive skills).

The Competency Framework identifies pervasive skills in three categories:

(1) ethical behaviour and professionalism;

(2) personal attributes; and

(3) professional skills (SAICA, 2014).

The qualities and skills resorting under the three categories are described as follows:

- *Ethical behaviour and professionalism*: Protecting public interests, acting with honesty and integrity, exercising due care, being objective and independent, avoiding conflict of interest, protecting the confidentiality of information, enhancing the profession's reputation and adhering to professional conduct.

- *Personal attributes*: Demonstrating self-management and leadership, taking initiative and showing competence, adding value in an innovative manner, managing change, treating others in a professional manner, understanding the national and international environment, being a life-long learner, being a team member and demonstrating time management.

- *Professional skills*: Critical thinking, problem-solving, effective communication, supervising and managing, understanding the impact of information technology and considering basic legal concepts.

Pervasive skills, also known as generic skills or soft skills, could be developed independently from a specific field of study because they are not subject specific (Boyce *et al.*, 2001; Barrie, 2004). Weber *et al.* (2009) defined soft skills as the interpersonal, human, people or behavioural skills needed to apply technical skills and knowledge in the workplace. The generic skills generally referred to in the literature include communication (verbal, listening and writing), interpersonal interaction, critical thinking, problem-solving and analytical skills (Hassall *et al.*, 2005; Paisey and Paisey, 2010; Hartie *et al.*, 2011; Barac and Du Plessis, 2014).

Based on the literature and drawn from the competency framework (SAICA, 2014), accounting students need to develop the following 12 pervasive skills:

(1) communication (verbal);
(2) communication (listening);
(3) communication (writing);
(4) problem-solving;
(5) teamwork;
(6) time management;
(7) leadership;
(8) professionalism;
(9) ethical awareness;
(10) strategic thinking;
(11) critical thinking; and
(12) influencing others.

2. Research objective and contribution

The primary objective of this paper is to determine the usefulness of an innovative educational game in encouraging the application of pervasive skills in final-year undergraduate accounting students. The research was based on the perceptions gathered from three groups of role-players, namely, accounting students who physically participated in the educational game; accounting students who did not participate, but who acted on the planning and organising committee of the educational game; and staff from employer companies (accounting, auditing and advisory firms) who were involved during the educational game.

The key learning objective of the educational game was to expose students to the development through the application of as many of the pervasive skills required in terms of the competency framework as possible. A tax-related educational game was used as an experiential teaching tool to develop these skills and entailed the integration of tax knowledge with physical activities to be performed in an innovative manner. The paper, therefore, endeavours to answer the following research questions:

RQ1. Did the educational game encourage students to apply pervasive skills?

RQ2. Which pervasive skills were most and least prominent in the educational game?

RQ3. What were the most important perceived benefits derived from the educational game?

RQ4. What were the main constraints of the educational game?

This paper contributes to the current body of knowledge and the on-going discussion on teaching methods that can develop pervasive skills as part of higher education accounting curricula. The usefulness of innovative teaching methods in accounting education needs to be determined to keep track of the ever-changing nature of accounting and its concomitant accounting education needs. The paper is unique in the fact that the educational game's usefulness can be determined for three different groups of role-players. The findings could serve as a platform for accounting educators, professional bodies and employers in respect of the future design of teaching methods aimed at pervasive skills development in the field of accounting education and training.

The remainder of the paper is organised as follows: first, the relevant literature on pervasive skills development in accounting education is reviewed and the research gap highlighted. This is followed by a description of the development of the educational game and an explanation of the research design and methodology. Finally, the empirical findings of the paper are reported and discussed, followed by a summary of the key findings and conclusions, as well as suggestions for further research.

3. Literature review: pervasive skills development within accounting education

New concepts, strategies and methodologies need to be introduced into the teaching of accounting for students to be able to acquire professional skills (Kermis and Kermis, 2010, p. 5). The desperate need to incorporate soft skills into higher education accounting curricula is evident (Adler and Milne, 1997; Gammie *et al.*, 2002; Kern, 2002; Ballantine and McCourt Larres, 2009), but studies are not explicit on how to achieve the integration and practical implementation (De Villiers, 2010). Also, SAICA's competency framework (SAICA, 2010) does not provide direct guidance to educators and trainers; thus, it remains the responsibility of the academic providers to design courses in such a way that they enable the acquisition of the qualities and skills required by SAICA. Barac and Du Plessis (2014) found considerable variation in the way in which the development of pervasive skills is incorporated in the curricula of undergraduate programmes of SAICA-accredited universities. They suggested more integration of pervasive skills into course majors.

The education philosopher, Dewey (1938), believed that experiential learning theory should be applied in teaching to promote the development of pervasive skills through increased student engagement. Experiential learning is a philosophy of education based on the theory of learning from actual experiences (Kolb and Kolb, 2005; Fouché, 2013) and encompasses a range of teaching methods such as case studies, games, role-plays, field experiences, group projects and simulations (Cherrington and Van Ments, 1994; Fouché, 2013). The aim of experiential learning is to avoid single-solution scenarios and to encourage learners to experiment from subject knowledge (Kreber, 2001). Experiential learning is found to be more effective than traditional learning (Yan, 1999) because it produces more motivated learners (Burns and Gentry, 1998), it instils greater sensitivity for detail necessary for effective decision-making and management skills (Babbar, 1994) and it promotes life-long personal and professional development through self-learning and reflection (Hannon *et al.*, 2004).

The educational game in this paper is unique in that its activities (refer to Section 4) encapsulate numerous experiential learning methods and combinations thereof. Table I

Researchers	Teaching method	Pervasive skills researched	Key findings
Adler and Milne (1997)	Problem-based learning case study	Teamwork; Communication (verbal)	Enhanced teamwork skills, desire for self-improvement, and oral communication skills
Ballantine and McCourt Larres (2009)	Case study	Organisational; Communication (verbal and writing)	Contributed to skills development, regardless of accounting work experience
Barsky and Catanach (2005)	Simulation	Critical thinking; Communication (verbal)	Improved critical thinking and oral communication skills
Dale-Jones et al. (2013)	Intervention	Communication (writing)	Improved ability to apply assessment standards to grammatical, structural and presentation components of written communication
Edmonds et al. (2003)	Problem-based learning	Critical thinking; Communication; Leadership	Helped in developing critical and creative thinking, decision-making, communication and leadership skills
Fouché and Visser (2008)	Board game	Communication (verbal); Critical thinking; Strategic thinking	Enhanced development of technical competencies and soft skills; broadened view of the role of the professional accountant
Kern (2000, 2002)	Problem-based learning	Critical thinking; Problem-solving	Developed critical thinking and problem-solving skills
Maelah et al. (2012)	Field experiences (industrial training)	Time management; Communication (oral); Teamwork	Developed time management, oral communication and group work skills
Sawyer et al. (2000)	Case study	Professionalism; Communication (writing); Problem-solving	Developed professionalism and writing and problem-solving skills
Stainbank (2003, 2009)	Group projects	Management; Teamwork; Interpersonal skills	Developed management and interpersonal skills; contributed to career preparedness
Van der Merwe (2013)	Case study and business simulation	Teamwork; Communication (verbal and writing)	Developed teamwork, research, communication, computer and presentation skills
Weil et al. (2001)	Case study	Critical thinking; Problem-solving; Strategic thinking	Developed problem-solving skills, helped to apply and integrate theory to the real world and distinguish facts from opinions
Weil et al. (2004)	Case study	Critical thinking; Problem-solving; Strategic thinking	Helped with evaluating situations from several perspectives, considering alternative solutions, applying judgment, analysing and solving problems, identifying relevant information and integrating knowledge

Table I.
Teaching methods for researching pervasive skill development in accounting education

summarises both local and international literature on teaching methods applied and researched in accounting education and their contribution to the development of pervasive skills and competencies.

Most of these studies applied only one teaching method and focused on a limited number of specifically identified pervasive skills. Clearly, a gap exists in the literature on the usefulness of single interventions involving a wide range of pervasive skills using various experiential learning methods. Furthermore, active learning methods seem to be developed and evaluated mainly within the subject-specific areas of financial accounting, auditing, managerial accounting and finance and none in taxation. In a recent study, CA(SA) candidates indicated that management decision-making and control, auditing and assurance and taxation had the lowest contribution to the development of their pervasive skills (Strauss-Keevy and Maré, 2014). Therefore, more tax-related teaching methods aimed at pervasive skill development should be applied, and their usefulness evaluated, to address the identified research gap, namely, a lack of teaching methods aimed at exposing students to the broader spectrum of the required pervasive skills set.

4. Development of the educational game

The author (as main researcher) initially established the concept of *The Amazing Tax Race* (hereafter referred to as "the educational game") in 2011, and has since presented it to final-year undergraduate accounting students over four consecutive years. The educational game comprises interactive tax-related activities. The design of the educational game is based on the principles of the active learning theory (Ritzko and Robinson, 2006). Today's students prefer a responsive learning environment where they can be more actively involved in the learning process, and where they can obtain immediate feedback (Sugar and Takacs, 1999). Using gamification, as was applied in this study, as a vehicle to promote active learning, may be an option to provide students with such a learning environment. The educational game takes on the form of a race against time where student teams participate in tax-related activities hosted at stations across the campus. Although the integration of tax knowledge in these activities is important, the overall focus remains on the exposure to and the development of pervasive skills and competencies. Participants receive clue cards leading to the stations on a rotation basis. Clue cards comprise a combination of tax related crossword puzzles to be completed where a combination of answers reveals the next destination, tax riddles incorporated with tax case law names and tax calculations to be performed where answers indicate a specific campus building or room number. To decrypt clues and complete activities successfully, teams need to apply their tax knowledge by working together and communicating effectively. This requires strategic and critical thinking while acting in an ethical and professional manner, all under time constraints.

The author was responsible for developing and organising all aspects of the educational game in the initial stages of the project. In response to the challenge of large class sizes and to accommodate as many students as possible, an organising committee was established in 2014 to expand the involvement of the students in the planning and executing of the educational game. Students could choose, based on their personality type and preferred learning styles, to be involved in the educational game either as a participant or as an acting member of the committee. Committee members were tasked in pairs to develop a tax-related activity, keeping the application of pervasive skills in

mind, to be hosted at a station on the day that the educational game was presented to participants. Activities had to be presented at a committee meeting to obtain feedback from all members (thus, achieving peer assessment) and ultimate approval of technical correctness and practical feasibility by the author. Examples of activities included a tax-related monopoly game, a "*Fringe Idols*" game where teams need to create and perform a song illustrating the tax implications of specific fringe benefits and a wheelbarrow race where teams need to obtain private and business kilometer cards to perform a travel allowance calculation. The race comprised 13 stations across campus, each hosting a tax-related activity. Ten teams comprising eight students per team participated in the race that took between two and a half and three hours to complete. One tax professional body and six accounting, auditing and advisory firms were approached for sponsoring the stations and assisting the committee members in hosting the activities. Sponsorship entailed prizes for the top three teams, best team spirit, most creative team name, best team dress, and prizes for individuals demonstrating outstanding leadership qualities. The educational game also served as a networking opportunity for students and prospective employers.

5. Research design and method

5.1 Overall research design and method

Action research was considered to be the most appropriate research method to determine the usefulness of a newly developed and innovative teaching method. Mills (2011) described "action research" as an on-going creative activity in which the researcher is exposed to surprises along the way. The design of innovative teaching and learning practices constitutes a continuous creative process that requires reconnaissance, identifying questions, planning, acting, observing, collecting data and reflection to ensure its ultimate usefulness (Grundy, 1995; Maxwell, 2003; Kemmis and McTaggart, 2005; Apostolou *et al.*, 2010; Sherab, 2013). A parallel convergent mixed-method research design was followed and aimed to build on the synergy and strength that exist between quantitative and qualitative research (Johnson and Turner, 2003; Creswell *et al.*, 2011).

5.2 Data collection

Quantitative data were collected through questionnaires, and qualitative data were collected through focus group interviews. Both data sets were supplemented by the author's field notes and observations as an active participant in the action research process. The process lasted over a four-year period of designing, planning, delivering, reflecting and making adjustments to the educational game. Ethical clearance was obtained from the higher educational institution where the research was conducted.

5.2.1 Collection of quantitative data. Students' perceptions are important and good sources of information because students know their own situation well, uniquely know how students think and feel, experience a teaching method first hand and can directly indicate the benefit from it (Steenkamp *et al.*, 2009). Three questionnaires were developed to survey the perceptions of the three groups of role-players in the educational game. These questionnaires were mainly developed from a questionnaire that had been used to assess student perceptions of an accounting educational board game (Fouché and Visser, 2008). Support was provided by a review of literature on teaching methods in accounting education aimed at pervasive skills development of students and their

perceptions thereof. Additional sources, such as SAICA's competency framework and literature on questionnaire design, were also considered in developing the questionnaires. Questionnaires comprised both open-ended and Likert-type scale questions. The Likert-type questions were applied on a four-scale rating because an even-numbered scale is recommended to measure teaching effectiveness (Berk, 2014). The questions covered the following areas:

- demographic and profile information;
- opinions on the application of and exposure to pervasive skills;
- perceived benefits and constraints of the educational game; and
- personal meaning gained from and overall experience of being part of the educational game.

Three independent accounting education researchers and one independent statistical consultant reviewed the questionnaires to ensure its validity, completeness and unbiased nature. The student questionnaires were then tested on a sample of students to identify ambiguity and determine face validity.

One week after the educational game was hosted, hard copies of the questionnaires were distributed to the student participants and the student organising committee to be completed and returned at the end of a tax lecture contact session. Staff of the participating accounting, auditing and advisory firms received their questionnaires on the day the educational game was hosted to be completed and submitted immediately afterwards. The completion of all questionnaires was totally voluntary, and all questionnaires were completed anonymously. An independent statistician captured and analysed the data by means of SPSS (SPSS Inc, 2014). Data from open-ended questions were captured and summarised in similar categories using Microsoft Excel for further analysis.

5.2.2 Collection of qualitative data. Collecting qualitative data by means of student focus group interviews has proved to be the richest source of information and is recognised as highly effective for studying education and training (Field, 2000). A series of semi-structured interviews (Flick, 2006) were conducted with student teams within two weeks after the educational game. The author acted as focus group facilitator and introduced a number of pre-determined discussion points to ensure the continuous flow of relevant conversation. The fact that the author had not been lecturing the students contributed to ensuring anonymity between the students and the author as focus group facilitator. Interviews were audio and video recorded (with permission of the interviewees after total confidentiality had been assured) and lasted between 50 and 60 min each. All interviews were conducted in the same boardroom on campus. Participation in the interviews was voluntary, and, to ensure complete independence, no incentive was provided for participation. Forty-six of the 80 students who participated in the educational game attended the interviews (representing 58 per cent coverage and a fair spread of gender, 18 males and 28 females). After eight of the ten participating teams had been interviewed, the researcher decided to cease further interviewing as data saturation had been achieved (Davies, 2007; Greeff, 2012).

The author transcribed and analysed the interviews using ATLAS.ti (version 7.1.4, 2014). The data were analysed using a deductive coding approach (Elo and Kyngäs, 2008; Saldaña, 2013). Quotes in Afrikaans were meticulously translated into English and was reviewed by an independent person as a measure to ensure that the meaning

remained the same. From the analysis, themes emerged and theory-building was enabled (Friese, 2012) through the identification and conceptualisation of the relationships between coded data.

6. Empirical research findings

6.1 Study population profile

The target population comprised all 258 students registered for the third-year taxation module in 2014 as part of the chartered accountancy degree programme. The sample population consisted of three groups, namely, the students who participated in the educational game (ten teams of eight individuals), the students who acted on the organising committee (28 students) and 30 staff members representing seven employer companies who sponsored the educational game and who were present on the day it was hosted to assist with and man the various stations of the educational game. The employer companies comprised six accounting and auditing firms (which included Big Four firms) and one tax professional body. Faithful to the experimental nature of action research, only 80 students were allowed to participate and 28 students to act on the committee. All students had a fair chance to be part of the educational game. Students had to enter via email volunteering to either act as participant or as committee member. As limited space was available entrants qualified for participation on a first-come-first-serve basis. However, this could not be considered to be a random sample from the target population, but rather as an availability sample. From the total study population, 71 completed questionnaires were received from student participants (response rate of 88.8 per cent), 24 completed questionnaires were received from student committee members (response rate of 85.7 per cent) and 23 completed questionnaires were received from the staff of employer companies (response rate of 76.7 per cent). The staff from employer companies represented various levels of experience. The profile of the study population is summarised in Table II.

Variable	Participants (%) N = 71	Committee members (%) N = 24	Employers (%) N = 23
Gender			
Male	36.6	20.8	30.4
Female	63.4	79.2	69.6
Race/ethnic group			
African/Black	1.4	33.3	
Coloured	1.4	4.2	
Indian/Asian	1.4	4.2	
White	95.8	58.3	
Position held at firm/professional body			
Manager			8.8
Recruitment Officer			13.0
Human Resource Manager			13.0
Trainee Accountant			34.8
Tax Consultant			30.4

Table II.
Profile of the study population

Focus group interviews were held with participating teams. Although it is not a sampling requirement for qualitative data analysis to obtain adequate coverage, it was re-assuring to note that 46 of the 80 students (57.5 per cent) who participated in the educational game voluntarily took part in the interviews.

6.2 Application of pervasive skills in the educational game

The competency framework states that knowledge and understanding alone do not result in competency; the ability to execute a task by applying knowledge and understanding in practical circumstances is indispensable for the acquisition of a competency (SAICA, 2014). Therefore, to determine which pervasive skills and competencies respondents applied in the educational game (and to answer the first research question), the questionnaire contained 14 variables testing the opinions of both student participants and student committee members on the extent to which they had to apply various actions which indirectly represent the pervasive skills required by SAICA. The "indirect" representation is drawn from the meaning of and the manner in which the pervasive skills are defined in the literature. The responses to the 14 variables are summarised in Table III.

The mean perception score for both these groups for all 14 variables were all averaging between 3 (or close to 3, representing "Quite a bit") and 4 (representing "A great deal"). Thus, the majority of participants and committee members indicated that they had to apply all the pervasive skills (indirectly referred to in variables 3.1 to 3.14).

On comparing the perceptions of the participants with the committee members, two significant differences in the mean scores (variables 3.1 and 3.2) were noted where the p-values were both smaller than 0.05 (Pallant, 2007). Also, the effect sizes (d values) of the first two variables were 0.59 and 0.47, respectively, indicating a medium to large statistical significant effect in practice (Ellis and Steyn, 2003).

The first significant difference (variable 3.1) pertains to the committee members' opinion that they had learned more from the way that participants and fellow committee members interpreted different concepts than the participants had. This finding could be ascribed to the fact that the educational game provided a two-folded opportunity for committee members to learn from peers. The first opportunity was during the planning stage of the educational game. By means of brainstorming and sharing ideas on the tax activities, members were exposed to the way that peers interpreted tax concepts. Second, during the educational game itself, committee members had the opportunity to observe the way in which each team visiting their station interpreted information to solve problems and complete the activities. This could be linked to the following pervasive skills:

- communication (verbal and listen);
- teamwork;
- critical thinking;
- strategic thinking;
- leadership; and
- professionalism.

The second significant difference (variable 3.2) relates to committee members indicating that they had to deal with different personalities, backgrounds and

No.	Variable	To what extent did you have to do or use the following during your participation in the educational game? Participants (N = 71) Mean (1-4)	SD	Committee members (N = 24) Mean (1-4)	SD	p-value*	Effect size (d value)^
3.1	I learned from the way participants/committee members interpreted different concepts	3.10	0.90	3.63	0.58	0.00	0.59
3.2	I had to deal with different personalities, backgrounds and cultures	3.32	0.82	3.71	0.55	0.01	0.47
3.3	Thinking on my feet/making decisions fast	3.51	0.70	3.25	0.68	0.12	0.37
3.4	I contributed to the success of my team activity to be hosted	3.19	0.71	3.42	0.58	0.12	0.33
3.5	I thought differently about academic concepts due to being forced to think creatively	3.24	0.75	3.46	0.72	0.21	0.29
3.6	I directed my team/committee members on what to do and how to do it	2.80	0.65	3.00	0.89	0.32	0.23
3.7	I had to listen to the opinions of fellow team members and/or committee members	3.62	0.54	3.50	0.59	0.39	0.20
3.8	I had to manage around conflict and differences of opinion	3.04	0.94	2.83	1.05	0.39	0.20
3.9	Express my opinion in concepts with my fellow team/committee members	3.29	0.71	3.17	0.70	0.48	0.17
3.10	I applied theoretical concepts practically	3.38	0.80	3.25	0.79	0.49	0.16
3.11	I had to apply critical thinking skills to solve problems	3.39	0.67	3.29	0.75	0.59	0.13
3.12	The manner in which I presented myself adhered to the SAICA code of conduct	3.53	0.56	3.58	0.50	0.66	0.10
3.13	I had to adapt to change and unexpected events	3.27	0.79	3.33	0.76	0.72	0.08
3.14	I had to take a stand to convince my fellow team and/or committee members of facts and theory application	2.93	0.79	2.87	0.76	0.76	0.07

Table III.
The *t*-test comparison between participants and committee members on the application of pervasive skills

Notes: *p-value: <0.05, indicates a significant result, assuming a random sample; ^d value: Small effect: $d = 0.2$; medium effect: $d = 0.5$; large effect: $d = 0.8$

cultures to a greater extent than the participants had to. This finding could be motivated by the fact that committee members had been required to work and interact more closely when planning the educational game. Other than informal planning of team dress, team name and war cry to be performed on the day of the educational game, the participants were not necessarily required to interact with one another before the educational game. For this reason, the committee members had the greater opportunity to develop general interpersonal skills which include elements of the following pervasive skills:

- teamwork;
- professionalism;
- ethical awareness; and
- communication (listen, verbal and writing).

Another reason supporting the higher score for committee members is because they had the opportunity to interact on a personal level not only with other members but also with all the participants who visited their stations, the organising lecturer (author) and the staff from the employer companies assisting at the stations. The profile of the study population (Table II) also indicates that the cultural composition of the committee was more diverse in comparison to the homogeneous group of participants, which could also have contributed to this significant difference.

6.3 The most and least prominent pervasive skills in the educational game
To answer the second research question, focus group interviews were held. Interviewees were shown a list of the 12 pervasive skills drawn from the competency framework and requested to discuss which of these skills had been most prominent, least prominent or totally lacking in the educational game. Interviewees were also required to motivate their responses by providing examples of their experiences. For comparison, the questionnaire for the staff of employer companies contained an open-ended question to gauge their perceptions on the pervasive skills that were prominent in the educational game. The summarised results are shown in Table IV.

From Table IV, it is evident that teamwork was perceived by both interviewees and staff from employer companies to be the most prominent skill of the educational game. This corresponds with the findings in Table V where participants, committee members and employer companies all indicated that "teamwork skills development" is the

Prominent pervasive skills	Students: Focus group interviewees N = 46		Staff from employer companies: Questionnaire N = 23	
	Frequency	%[a]	Frequency	%[b]
Teamwork	12	26.1	17	73.9
Communication (listening)	12	26.1	8	34.8
Problem-solving	10	21.7	3	13.0
Communication (verbal)	9	20.1	4	17.4
Influencing others	6	13.0	1	4.3
Strategic thinking (strategy)	5	10.9	–	–
Time management	3	6.5	4	17.4
Critical thinking	3	6.5	2	8.8
Professionalism	2	4.3	1	4.3
Leadership	1	2.2	2	8.8
Ethical awareness	1	2.2	–	–

Notes: [a] Number of instances mentioned (frequency) divided by the number of interviewees; [b] Number of instances mentioned (frequency) divided by the number of completed questionnaires; (Respondents were allowed to indicate more than one type of pervasive skill; thus, the total exceeds 100%)

Table IV.
Prominent pervasive skills in the educational game

Benefit themes	Participants (%) (N = 71)	Committee members (%) (N = 24)	Employers (%) (N = 23)
Teamwork skills development	33.8	25.0	56.5
Learning by having fun	23.9	16.7	17.4
Better understanding of tax theory and tax concepts due to practical application	19.7	12.5	8.7
Communication skills development	8.5	4.2	–
Development of social skills/relationship building/interpersonal skills	8.5	29.2	–
New way of learning	2.8	20.8	4.3
Problem-solving skills development	2.8	–	8.7
Time management skills development	1.4	4.2	4.3
Critical thinking skills development	1.4	8.3	4.3

Note: Some respondents indicated more than one greatest perceived benefit; thus, the total exceeds 100%

Table V.
Greatest perceived benefit of the educational game

greatest perceived benefit of the educational game. Interestingly, although the order of frequency differs, the top four skills identified by the two groups correspond, being teamwork, communication (listening), problem-solving and communication (verbal), as indicated by interviewees, and teamwork, communication (listening), communication (verbal) and time management and problem-solving, as indicated by staff from employer companies.

Eleven and 9 of the 12 pervasive skills required by the competency framework were indicated, respectively, by interviewees and staff from employer companies to be prominent in this educational game. This proves that the educational game was successful in incorporating and exposing students to a comprehensive range of the pervasive skills set.

Some of the noteworthy comments by interviewees, supporting the results in Table IV, on the four prominent pervasive skills are quoted below:

• Teamwork

Definitely teamwork. There was no chance for a single person to perform an activity totally on its own. And we all like continuously chipped in like "look here, look here" and we were like operating as a team the whole time.

• Communication (listening and verbal)

I think it's also where the communication, listening and verbal, came in because you had to listen, but you should also be able to say why you say certain things. And I think if you cannot listen, that's maybe why so many of the teams were fighting, because there were people who simply could not listen and just thought that they were right all the time.

• Problem-solving

There were many problems that had to be solved. It was not possible to just sit and to make the problem your own. You had to like discuss it amongst each other and you had to listen to other people to hear how they saw the problem.

Although the average perception of participants were that all 12 pervasive skills were present in the educational game in some or other way, the four pervasive skills that were perceived to be the least prominent were:

(1) communication (writing);
(2) professionalism;
(3) ethical awareness; and
(4) leadership.

Some of the noteworthy comments by interviewees are quoted below:

• Professionalism

I think professionalism, since it was actually in a funny environment. You had to work quickly, but without being rude.

And I also think we have not really registered, okay, this is people from like big companies that we are working with, and now we actually have to act professionally. We just wanted to complete the tasks so that we can move on.

• Ethical awareness

I think the ethical awareness did not really feature, because I think it is within us. It is part of our profession, and actually you just don't want to cheat.

• Leadership

I think that leadership was not necessarily something that was there for everybody. I think it would be like there for one or two persons in the group.

6.4 Greatest perceived benefit of the educational game

To answer the third research question, the respondents from all three groups were required to indicate the greatest benefit of the educational game. This was asked as a separate open-ended question. Benefits listed were summarised and similar answers were categorised into themes, of which the results are indicated in Table V.

All three groups mentioned teamwork skills development as the greatest benefit of the educational game. Apart from pervasive skills development, it is also important to highlight that the educational game was perceived to be largely beneficial in developing technical (hard) skills, such as obtaining a better understanding of tax theory and tax concepts due to practical application. Other benefits reported only by the participant group were to learn in a relaxed environment, to receive rewards (prizes) for participation and to have the opportunity to have fun and a break from normal academic work.

6.5 Constraints arising from the educational game

Table VI summarises the codes identified from the open-ended question to all three groups on the possible constraints or negative aspects of the educational game.

Although also indicated by the committee members and the employers, it was the participants who felt that the physical aspect of the educational game was the main constraint. As the educational game took on the form of a race against time, teams were required to move between the various stations as fast as possible, which required

running. Some participants indicated that they struggled to keep up, that they were tired and that they realised how unfit they were. Other participants expressed irritation with team members who slowed down their team. In the focus group interviews, participants indicated that this taught them to be more patient and accommodating towards team members, which contributed to the development of teamwork and leadership skills when unfit participants had to be motivated.

Negative aspects relating to time management raised by employers were that teams were too rushed and too focused on winning, which resulted in their missing important interpretations of the information and prohibited their full comprehension and understanding of concepts. Participants indicated that they found time management challenging during the educational game because they did not know where they were tracking in comparison to other teams. In some cases, certain teams moved too fast, resulting in bottle-necking at stations. Committee members perceived the educational game to be too time consuming. This could be due to the fact that committee members, unlike participants, were involved not only during the educational game itself but also during the preparation of the educational game.

Concerns raised by participants in respect of the competence level of the committee included factors such as: *committee members were not always aware of answers to activities*; *instructions at certain stations were not clear* and *questions were not always asked clearly and this wasted time*. With regard to knowledge level of participants, the participants themselves indicated the following aspects that they experienced negatively: *the knowledge level of their team members; their struggle to apply knowledge to practice; and their inability to be effective team players*.

Committee members experienced limited participation space as a significant constraint, and some indicated that they acted on the committee only because they still wanted to be part of the educational game after applying too late to qualify as participants. In contrast, both participants and employers mentioned that the team sizes were too big, allowing for certain team members to not actively participate, without being noticed.

6.6 Appropriateness of the educational game for developing pervasive skills
Respondents from all three groups were required to describe the educational game in one word. Table VII contains a frequency distribution from the qualitative summary and indicates that the vast majority of respondents (all above 90 per cent) from all three groups described the educational game with positive words. The three words that were

Constraint themes	Participants (%) (N = 71)	Committee members (%) (N = 24)	Employers (%) (N = 23)
Physical aspect/fitness level	18.3	8.3	8.7
Time management	11.3	8.3	17.4
Group/team sizes	9.9	–	8.7
Competence level of committee	9.9	–	–
Competence level of participants	7.0	–	4.3
Limited space for participation	5.6	20.8	–
Other	5.6	25.0	13.0

Table VI.
Main perceived constraints of the educational game

used the most in each group were "fun", "amazing and awesome". Other positive words used in at least two of the three groups and that were repeated more than once were "brilliant", "creative", "enjoyable", "exciting", "fantastic", "incredible" and "innovative". Only three respondents from the group of participants described the educational game negatively, namely, as "average", "terrible" and "tiring". Words used by respondents that supported the educational game's ability to contribute to personal attributes and pervasive skills development included "challenging", "fast", "interactive", "teamwork" and "uplifting". The innovative nature of the educational game is supported by words such as "adventure", "creative", "exceptional", "experience", "extraordinary", "innovative", "unforgettable" and "unique".

Table VIII contains an analysis of variance test between the three groups' perceptions as to the educational game's effectiveness as teaching method to develop pervasive skills in students. The ANOVA resulted in a significant difference in the mean scores for the three groups, as the p-value is 0.02 (which is below 0.05). The mean score for the committee members and the staff from employer companies were closer to 4 (representing "Strongly agree"), while the mean score for participants were closer to 3 (representing "Agree"). This difference might be attributable to the fact that committee members were forced to develop various pervasive skills because they were compulsory for planning, organising and executing the educational game. Participants, on the other hand, could have participated with a pre-determined attitude of not being interested in some of the activities. The latter statement is summarised in the following response from a participant during the focus group interviews:

Word description	Participants (%) (N = 71)	Committee members (%) (N = 24)	Employers (%) (N = 23)
Positive word descriptions	91.6	95.8	91.3
Negative word descriptions	4.2	–	–
No response	4.2	4.2	8.7
Total	100	100	100

Table VII.
Frequency distribution of describing the educational game in one word

Variable	Participants (N = 71) Mean (1-4)	SD	Committee members (N = 24) Mean (1-4)	SD	Employers (N = 23) Mean (1-4)	SD	p-value*
Do you think the educational game is an effective teaching method of exposing students to the development of pervasive skills?	3.48	0.58	3.75	0.44	3.77	0.43	0.02

Note: *p-value: <0.05, indicates a significant result, assuming a random sample

Table VIII.
Comparison of the overall appropriateness of the educational game for developing pervasive skills

I certainly think the Amazing Tax Race provides the opportunity to apply all those skills, limited to the extent to which you expose yourself to it. I mean, you will decide how many times you want to express your opinion. You will choose in what sense you want to act professionally. So it definitely creates the opportunity to apply all that stuff, but it depends on you how much you want to engage to apply, learn and develop those skills.

Table IX indicates the results on whether the students, either in the role as participants or committee members, would recommend the educational game and similar teaching activities to other students as a method to develop pervasive skills.

Although no significant differences were reported, the mean scores for participants and committee members were both close to 4 (representing "Strongly agree"), serving as a proof that the educational game was indeed perceived to be useful in developing pervasive skills in accounting students.

7. Conclusion and recommendations

The objective of this paper was to investigate the usefulness of an educational game for developing pervasive skills in accounting students. Both the quantitative and quantitative findings indicated that the educational game was perceived to be successful in encouraging accounting students to apply the broader spectrum of pervasive skills required by SAICA's competency framework.

Overall, the educational game was described positively and students agreed that it was an effective teaching method for developing pervasive skills. Students indicated that they would recommend the educational game to other students and that similar teaching methods should be applied to develop pervasive skills. Based on the findings, it is recommended that accounting educators attempt to incorporate a broader set of pervasive skills into their accounting modules by applying innovative teaching methods similar to the one in this paper. This could be achieved by combining various experiential learning methods into one single game or similar method.

In conclusion, this paper adds to new insights into the perceptions and experiences of students and accounting, auditing and advisory firms regarding a tax-related educational game aimed at pervasive skills development in South Africa. It is suggested that, apart from evaluating the usefulness of similar teaching methods for developing

No.	Variable	Participants (N = 71)		Committee members (N = 24)		p-value*	Effect size (d value)^
		Mean (1-4)	SD	Mean (1-4)	SD		
9.1	I would recommend participation in/acting on the committee of the educational game to other students	3.85	0.47	3.67	0.48	0.12	0.37
9.2	I would recommend teaching methods similar to the educational game to be hosted to develop my pervasive skills	3.61	0.64	3.75	0.53	0.28	0.22

Notes: *p-value: <0.05, indicates a significant result, assuming a random sample; ^d value: Small effect: $d = 0.2$; medium effect: $d = 0.5$; large effect: $d = 0.8$

Table IX.
The t-test comparison on overall recommendation of the educational game between participants and committee members

pervasive skills, future studies should focus on the actual benefit of these methods and aim to develop reliable assessment criteria and instruments to measure the effectiveness of pervasive skills development. To enhance the face validity of similar studies of this nature, in future, it is recommended that quasi experiment testing could be applied. Also, the impact of different personality types and learning styles could be evaluated. It would also be interesting to investigate another perspective on the educational game, namely, the perceptions of students and accounting educators pertaining to the design variables of the educational game that either contributes to or strain pervasive skills development.

8. Limitations of the study

The research was subject to the following limitations:

- the study tested the perceptions of the usefulness of the educational game to develop pervasive skills and not the actual benefit derived, and identified the perceived main constraints of the educational game without considering strategies to overcome these constraints;

- the results could be impacted by the fact that students have different personality types, learning styles and learning preferences (Boyce *et al.*, 2001; Visser *et al.*, 2006);

- the effect of prior exposure to pervasive skills development, either by way of previous work experience or by way of exposure to similar teaching methods, was not tested or analysed;

- the possibility of sampling bias could exist due to the fact that students volunteered to participate in the research which could limit the generalisation of the findings; and

- owing to the nature of the educational game, and as part of the on-going action research evaluation process, only a limited number of students were allowed to participate in the educational game or to act on the educational game's organising committee. The educational game was also conducted as an extra-curricular activity and did not have an impact on the normal teaching–learning assessment of the module.

Note

1. SAICA-accredited universities' constitute programmes accredited by SAICA and mean that the academic unit has put in place the appropriate resources that, if used effectively, should enable it to deliver the programme at the required standards and levels of quality and the programme meets SAICA's requirements in terms of the standards of learning and teaching (SAICA, 2016).

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