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Improving the financial literacy of Grade 8 and/or 9 economic and management sciences teachers in the Western Cape

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The poor performance of learners in the 2017 National Senior Certificate accounting paper has raised concern. One way to improve the results in accounting over time is to ensure that the first introduction of accounting as financial literacy in the senior phase is done properly. The training of Grade 8 and/or 9 financial literacy teachers was therefore the main focus of this study. We investigated whether an intervention (a 2-day workshop aimed to improve teachers' understanding of financial literacy) could be an effective tool to improve the financial literacy of Grade 8 and/or 9 economic and management sciences teachers in the Western Cape. One hundred and two participants volunteered to write a pre-test (Test A or B) before the commencement of the workshop and 93 participants volunteered to write a post-test (a different but corresponding test to the pre-test) after the completion of the workshop. Only Grade 8 and/or 9 financial literacy teachers who attended the workshop and who completed the consent form were eligible to be part of the study. Mixed model analysis of variance (ANOVA) tests were performed on quantitative data. A generalised estimating equation model (GEE) was used for the interpretation of individual content questions and the Spearman test was performed on Likert-scale answers to evaluate correlations. The results reveal that the participants performed significantly better in the post-test. The results also show that participants were capable of defining basic accounting concepts but struggled to determine cost of sales. Future workshops based on financial literacy teachers' abilities are encouraged. Teachers with more experience could benefit from learning new teaching methodologies, while teachers with less experience will definitely benefit from a workshop where content is taught in detail.

Keywords: accounting; economic and management sciences; financial literacy; intervention; teacher training; teachers; workshop

Introduction

The results of the 2017 National Senior Certificate (NSC) exams raise concerns about accounting. Not only has the number of full-time NSC candidates for accounting dropped from 145,427 in 2013 to 103,427 in 2017, but accounting was also the subject with the third lowest pass rate (66%) of the 11 most popular subjects (Department of Basic Education (DBE), Republic of South Africa, 2017). Only physical sciences (65%) and mathematics (52%) had lower pass rates than accounting (DBE, Republic of South Africa, 2017).

The pass rate for accounting in the Western Cape was 72% in 2017 (DBE, Republic of South Africa, 2017). Even though this was better than the national average (Ave), this pass rate was the second lowest compared to candidate performance per subject in this province. The only subject (non-language) with a lower pass rate than accounting was business studies (71%) (DBE, Republic of South Africa, 2017). It must be said that the Western Cape produced the third best accounting performance of the nine provinces (DBE, Republic of South Africa, 2017).

The concern for accounting as a subject (in terms of fewer candidates enrolled for the subject as well as relatively poor pass rates) goes beyond the NSC results. The abovementioned facts raise concern for higher education educators of commerce as well as the workplace, which frequently reports the need for accountants. Employers that participated in an international talent shortage survey concluded that accounting and finance positions were among the 10 most difficult positions to fill within organisations (ManpowerGroup, 2018a). The survey reports the same finding when applied to South African employers – accounting and finance positions are also among the 10 most difficult positions to fill locally (ManpowerGroup, 2018b). The broader concern for accounting and the training of future accountants is, therefore, not unique to South Africa. Other countries are also searching for ways to attract more students to the field of accounting. In this study we took a step back from the workplace, higher education and the NSC results and investigated whether these concerns could be addressed when learners are first introduced to the subject at school.

Economic and management sciences (EMS) is a mandatory subject in the senior phase (Grade 7 to 9) of General Education and Training (GET) (Western Cape Government, 2018). EMS covers three topics, namely financial literacy (40% of the curriculum), the economy (30%) and entrepreneurship (30%) (DBE, Republic of South Africa, 2011). Financial literacy in the senior phase includes accounting concepts that are applied in accounting as subject in Grades 10 to 12 (Further Education and Training (FET)). Most schools offer learners a choice of subjects to enrol for in the FET phase, and it is not common practice that accounting is a mandatory subject in FET.

The EMS Curriculum and Assessment Policy Statement (CAPS) for the Senior Phase was introduced in January 2012 (DBE, Republic of South Africa, 2011). Since then, the percentage of the curriculum devoted to

financial literacy has been increased from 25% to 40% (DBE, Republic of South Africa, 2011). This is a clear indication that the DBE wants to prioritise accounting (Coetzee, EM 2016). It is, therefore, deemed worthwhile to investigate financial literacy teachers' abilities. In this study we investigated whether an intervention (a two-day workshop aimed to improve teachers' understanding of financial literacy) was an effective tool to improve the financial literacy of Grade 8 and/or 9 teachers of economic and management sciences in the Western Cape.

Literature Review

Financial literacy

Financial literacy is essential in an increasingly complex society and is therefore a key aspect of education (Organisation for Economic Co-operation and Development [OECD] International Network on Financial Education [INFE], 2011). The OECD INFE (2011:3) defines financial literacy as follows: "A combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being."

In South Africa, on Grade 8 and 9 level, financial literacy includes the following concepts: savings, budgets, income and expenditure, accounting concepts, accounting cycles, source documents, financial management and keeping of records (DBE, Republic of South Africa, 2011). The financial literacy content and learning outcomes for the Senior Phase are available in the training manual (Western Cape Education Department [WCED], 2016). Learners require knowledge, exposure and encouragement prior to making their subject choices and they need to have mastered the basic concepts of financial literacy to do well in accounting in Grades 10 to 12. Therefore, the teaching of financial literacy in Grades 8 and 9 is critical (Schreuder, 2009).

Teachers' role

Teachers play a vital role in interpreting policy and delivering this interpretation to their learners (Taylor & Vinjevold, 1999). Schreuder (2009) underlines this fact and goes on to report that teachers must have good knowledge of the subject content and should be competent in both the execution of higher-level thinking skills and the development of the skills in their learners. According to Ball and Cohen (1996, as cited by Coetzee, EM 2016), five possible factors might influence and shape the manner in which teachers deliver a curriculum, of which the following two are relevant to this study:

- Teachers are influenced by their ideas about their learners, the role that the learner plays in the learning experience and the knowledge of the learners regarding the content that they are taught.
- Teachers operate within their understanding and interpretation of the content of the curriculum, as well as what they deem to be important.

When EMS was introduced as a subject in 2012, there were very few teachers with formal educational qualifications to teach it (Schreuder, 2009). Therefore, it became the task of the accounting, business economics or economics teachers to teach this new subject in the Senior Phase (Schreuder, 2009). The problem was that these teachers were seldom equipped to teach all aspects of the learning area and they subsequently tended to spend more time on their field of expertise, whereas EMS requires of teachers to be knowledgeable in all the different disciplines included in the learning area (Schreuder, 2009). Letshwene's (2014) research confirms that Grade 10 accounting teachers' biggest challenge was learners' limited exposure to accounting in the Grade 8 and 9 curriculum (i.e. financial literacy).

Myburgh (2005) found that teachers greatly influence (third biggest out of 14 possible influences) learners' choice for tertiary studies which focus on accounting. This, partnered with the fact that S Coetzee and Oberholzer (2010) found that teachers surveyed in South Africa did not hold the accounting profession in very high esteem, might explain the shortage of accountants in the country (ManpowerGroup, 2018b).

It is evident that teachers play a critical role in preparing learners for their NSC accounting exam and also to encourage learners to consider a career in accountancy. However, if a proper foundation in accounting is not laid in Grades 8 and 9, learners are not inclined to continue with accounting after Grade 9. Those who do take the subject mostly struggle with it and are not likely to continue tertiary studies in this field.

Teacher training

The effectiveness of curriculum delivery by teachers is dependent on the support that teachers receive from other role players such as administrators, school management teams, and curriculum officials (Schreuder, 2009). These role players should be tasked with ensuring that a system is in place where teachers are able to effectively deliver the curriculum and where they receive training to build subject capacity (Schreuder, 2009).

Teacher training has been researched extensively abroad. A recent study in the United States of America (USA) used a teacher-as-learner professional development programme where they aimed to improve educators' understanding of their own finances in an attempt to improve their instructional practices (Hensley, Jurgenson & Ferris, 2017). The study found an improvement in their participants' financial behaviour over a period of six months and, more importantly, better integra-

tion of the topic into their classroom as a result of teacher training. An earlier study by Baron-Donovan, Wiener, Gross and Block-Lieb (2005) reports that teachers who attended a two-day train-the-trainer programme were generally more confident about teaching basic financial literacy after they attended the programme.

The need for teacher training has been voiced in South Africa. Ndlovu (2011) reports that teachers, especially at disadvantaged schools in the Western Cape, are in need of support with content for their own self-confidence in teaching. Teachers themselves have also voiced their concerns about inadequate training in the CAPS (Sosibo & Nomlomo, 2014). One of the recommendations related to teacher training involves a clear link between teachers' existing curriculum and new methodologies (Klapwijk, 2012). Maistry (2010) makes a strong argument for the role of higher education to be involved in teacher training and focuses on the importance of economic education.

Gouws (2002:43–44) underlines the main challenge with regard to teacher training: "The challenge for the training of teachers lies in the notion that teachers should be trained in such a way that they can present entrepreneurship as a subject in the classroom without having to be entrepreneurs themselves."

The same challenge applies to any subject field, not just entrepreneurship. EMS teachers, therefore, need more training so that they would be confident in their subject field regardless of their own background in accounting. Proper training of teachers might also have a roll-over effect on their learners. Hopefully, learners will have a better understanding and subsequently improved performance in the subject as a result of the improvement in the quality of teaching received.

Conceptual Framework

Teacher training could be facilitated in the form of an intervention. Boud and Hager (2012) suggests a practice-orientated approach to continued professional development. In this study we proposed a two-day teacher training programme (a practical approach) as an intervention, based on the content of a training manual (WCED, 2016), with the aim to improve the understanding of financial literacy of Grade 8 and/or 9 EMS teachers. The training manual (WCED, 2016) is the model on which the conceptual framework for this study was based, since this model contains the content which is important for the improvement of financial literacy in EMS teachers (Merki, 2014).

Limited research exists on the effect of an intervention (in the form of teacher training) on the knowledge of financial literacy teachers in South Africa. Following the success of financial literacy teacher training internationally, albeit training on personal finance or finance in general, we wished to investigate whether an intervention could improve teachers' understanding of their subject field in the hope that this would lead to better performance of learners.

Methodology

Research Objective, Questions and Contribution

The objective of this research was to determine the effectiveness of an intervention to improve the financial literacy of Grade 8 and/or 9 EMS teachers in the Western Cape, South Africa. Three research questions were developed to meet the objective.

1) How effective was the intervention?
2) How did participants perform in terms of individual financial literacy learning outcomes?
3) What were participants' perceptions of their own financial literacy ability and their impression of the workshop?

The main contribution of this research was to identify whether similar interventions could be implemented more often (and in more provinces) to improve the financial literacy knowledge (and knowledge of other topics included in EMS) of Grade 8 and/or 9 EMS teachers.

Context, Research Design, and Participant Management

The Teacher Professional Development Workshop (hereafter referred to as the workshop, which constitutes the intervention) was initiated by the WCED. This was done in collaboration with the School of Accountancy at Stellenbosch University (SU). The partnership between basic and tertiary education is supported by the research of Maistry (2010). The workshop focused on basic accounting principles and aimed to improve teachers' understanding of Grade 8 and/or 9 financial literacy. Three sessions were presented, namely: i) basic accounting concepts; ii) purchase and payment cycle and iii) revenue and receipt cycle. The content of the workshop was based on content from the financial literacy training manual (WCED, 2016) in an attempt to provide a new way of teaching existing curriculum as proposed by Klapwijk (2012). Grade 8 and/or 9 EMS teachers in the Western Cape were invited by the WCED's Deputy Director-General: Curriculum and Assessment Management to take part in the workshop. Invitations to attend the workshop were sent via a WCED Curriculum Minute (WCED, 2018) and teachers were required to enrol online. The workshop was presented at SU over a two-day period in June 2018 by lecturers of the School of Accountancy. These lecturers were all members of the South African Institute of Chartered Accountants and held the designation of Chartered Accountant (South Africa). The workshop was presented in Afrikaans and English.

In this research we used a mixed method which entailed collecting, analysing and integrating both quantitative and qualitative data (Creswell,

2009). We used a pre-test-post-test design to obtain primary data to answer the three research questions. Based on this research design participants were pre-tested, exposed to an intervention and post-tested to test whether improvement in the outcome could be the result of the intervention (Marsden & Torgerson, 2012). We designed two tests that were available in Afrikaans and English. Hereafter the tests are referred to as Test A and B. Participants were randomly allocated to write one of these tests before the start of the workshop (also referred to as the pre-test). The random selection of participants to write Test A or B was done by using the Excel "Rand" function to evenly distribute random numbers to the list of participants greater than zero and less than one. These random numbers were sorted from lowest to highest. Half of the participants completed Test A and the other half completed Test B as a pre-test. After the workshop, participants who completed Test A as their pre-test, completed Test B as their post-test and vice versa. Both tests were only available in hard copy. The researchers were invigilators at the pre- and post-tests.

Permission to conduct the research was granted by the Directorate Research of the WCED. All participants were informed about the intended research study via e-mail prior to the start of the workshop. Participation in this study was voluntary and all participants completed consent forms. The relevant authorities provided ethical clearance and institutional permission.

Data Design and Collection

Test A and B contained 14 multiple-choice content questions each. These content questions were based on the learning outcomes for financial literacy as set out in the training manual for Grade 8 and/or 9 EMS teachers in the Western Cape (WCED, 2016). Each of the 14 content questions, for both tests, were considered for validity in Appendix A. Content questions in Test A and B were not exactly the same, but the tests were considered to be of the same standard seeing that the corresponding questions in both tests aimed to test the same learning outcomes (see Table 1 and Appendix A). In the pre-test a set of multiple-choice questions were added for all participants, regardless of whether they completed Test A or B. These additional questions were added to obtain participants' biographical data and their opinions on financial literacy matters. Opinion questions were structured in Likert-scale format.

All participants completed the post-test at the end of the workshop. Test A and B as post-tests included the same content questions as the pre-test as well as space for additional feedback in terms of the intervention to collect qualitative data. In this way participants' progress from before the workshop to completion of the workshop could be monitored.

One of the options to each question in both tests was "I prefer not to answer" or "I do not know the answer." The 14 content-specific questions were each worth one mark. Participants wrote their answers on a separate answer sheet attached to the test. They were also required to write their names on the answer sheet. The names enabled the researchers to compare the results of the pre- and post-tests. The design of the pre- and post-tests differs from those of existing international intervention studies on financial literacy as the questions in this study were based solely on the module framework for learners of the subject in South Africa, as opposed to the study by Hensley et al. (2017) who based their tests on attitudinal and behavioural surveys.

Statistical Analysis and Measuring Results

The quantitative data collected from the two tests were summarised on a spreadsheet that was subjected to mixed model ANOVA tests using the Statistical software programme with the help of the Centre for Statistical Consultation at SU. A 5% significance level was applied to the data analysed ($p = 0.05$).

For the analysis of individual content questions, which is considered to be binomially distributed, a GEE model was used to interpret the results. The analysis of Likert-scale questions was performed by attaching a value to each response. Likert-scale options included "Strongly disagree," "Disagree," "Agree," "Strongly agree" and a preference not to answer the question. "Strongly disagree" was awarded a value of 1 to "Strongly agree," which was awarded a value of 4. If a participant chose not to answer a question, the response was ignored. The Spearman test was performed to determine whether correlations existed between Likert-scale options and participants' scores for the tests.

The qualitative data obtained from the comments made by the participants were summarised for each research question. The results are discussed in the next section.

Findings

The invitation to attend the workshop was sent to 1,777 teachers across the Western Cape. A total of 143 EMS teachers enrolled for the workshop online and could be considered as possible participants in this study. These teachers were randomly allocated Test A and B prior to the workshop. However, not all of the teachers who enrolled attended the two-day workshop. Only 107 teachers registered on day one of the workshop and 96 of the registered teachers volunteered to be part of the research study. These 96 teachers were therefore already pre-

allocated to write Test A or B. Six additional teachers who did not enrol online registered on day one and volunteered to be part of the research study. These six teachers were randomly given either Test A or B, in turn, to eliminate bias. In total, 102 teachers volunteered to be participants in the study and completed either Test A or B prior to the workshop. Three of these participants completed the wrong test and their results were not considered to have an influence on the outcome of this study. Their attempts were therefore included in the findings.

After the workshop only 93 of the initial participants completed the post-test. We, therefore, report on 102 pre-tests and 93 post-tests.

Research Question 1: How Effective was the Intervention?

Data were analysed with the use of two variables, namely, time and test sequence. The time variable compared participants' average score in the pre-test and the post-test. Test sequence refers to the order in which participants wrote their tests. There were two possible test sequences: Test A before commencement of the workshop and Test B after the workshop (sequence AB) or vice versa (sequence BA). It was found that in terms of the time variable, participants performed statistically significantly better in the post-tests than in the respective pre-tests with $p < 0.01$. The average score in the pre-tests was 58%, while the average score in the post-tests was 65%. Even considering that the workshop was voluntary for Senior Phase EMS teachers in the Western Cape and despite the fact that the participants performed better in the post-test, an average of 65% is still alarming. This could be as a result of these EMS teachers having no or limited formal education in financial literacy (Schreuder, 2009). The following comments were made by some of the participants:

> "*… some of us do not really have an accounting background*"; and
>
> "*Some of the teachers (are) were not trained to teach accounting… .*"

We therefore support Schreuder (2009) in that further training of EMS teachers in the Senior Phase is crucial for laying the foundation of basic principles for accounting in Grades 10 to 12. Even though the workshop lasted only two days, it was still encouraging to find a considerable improvement in participants' results. It should be noted that external factors outside of the researchers' control could have contributed to the improvement in results.

The comparability of the two tests was also investigated. Seeing that all 102 participants of the pre-test were randomly allocated Test A or B, there is a debatable presumption that these participants' abilities are similar. A comparison of the participants' pre- and post-test results were compared; there was no statistical difference ($p = 0.57$) between the average score for Test A (average 59%) and Test B (average 57%).

The data were also analysed for test sequence. The difference in results, i.e. the average for both tests combined (pre-test score plus post-test score averaged), between participants who performed sequence AB versus sequence BA were not statistically significant, with $p = 0.18$. However, when a two-way ANOVA was performed to evaluate the results of the tests by taking into consideration time as well as test sequence (the change in average from pre-test to post-test for the two test sequences), it was found that participants who answered in sequence AB performed statistically better after the workshop than participants who answered in sequence BA with $p = 0.01$. Careful interpretation of these results might suggest that the completion of Test A as the pre-test prepared the participants better for the completion of Test B as the post-test. This was an interesting finding considering that the two tests were considered similar in standard at the pre-test stage. Participants all attended the same workshop and the expectation was therefore that there should be a similar increase in average mark for both test sequences. Further investigation of the results of each individual content question was done to determine whether a specific question could have caused this result for test sequence BA. It was found that content question 13 in Test A could have been interpreted differently by the participants. By omitting question 13 from the two-way ANOVA for test sequence and time, the result changed and showed no significant interaction, with $p = 0.10$. See Figure 1 for a visual interpretation of the results of the content questions (excluding question 13 for both tests).

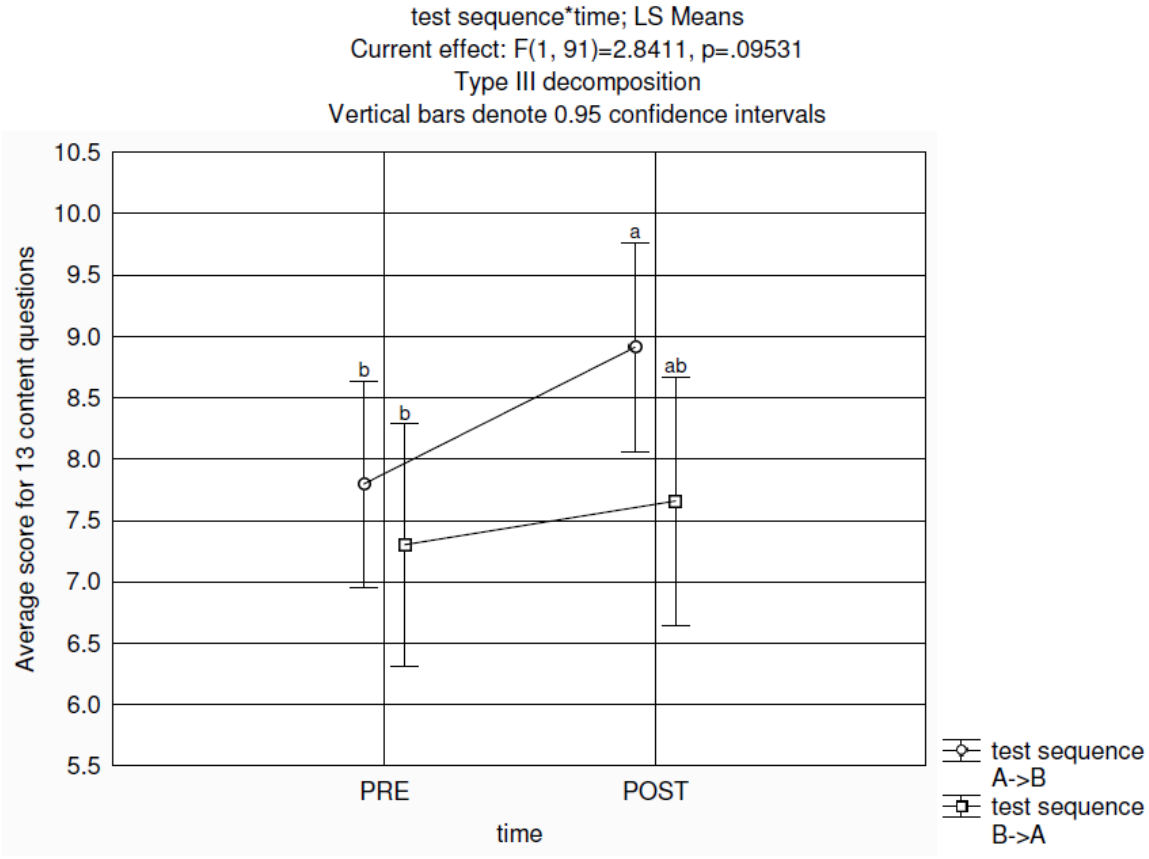


Figure 1 Increase in average mark from pre-test to post-test

Overall, the results discussed above show that the workshop as intervention did lead to statistically better results for participants and therefore the intervention was considered to be effective. Participants were also of the opinion that the intervention increased their knowledge of financial literacy, as can be seen from the following comments:

> "*I gained a lot of knowledge in this short time*"; and
>
> "*The teachers' workshop was an eye-opener and it has enhanced my financial literacy. I will use the information learnt to uplift my learners.*"

The results of this study support the findings of Ndlovu (2011) and Sosibo and Nomlomo (2014). Hopefully the improved performance of participants will provide the necessary self-confidence to teach the content to their learners.

Research Question 2: How did Participants Perform in Terms of Individual Financial Literacy Learning Outcomes?

The Grade 8 and/or 9 EMS teachers' financial literacy training manual includes three modules on 14 learning outcomes (WCED, 2016). Each content question in the pre- and post-tests was aimed at a learning outcome and was set from the examples in the training manual. The results of the content questions per learning outcome are summarised in Table 1. The *p*-values in the table firstly show the change in average score from pre-test to post-test (referred to as the time variable *p*-value) and secondly show the interaction between time, test sequence and average score (referred to as the interaction *p*-value).

Table 1 Grade 8 and 9 financial literacy learning outcomes

Learning outcome	Content question	Average score (%) pre-test A	Average score (%) pre-test B	Average score (%) pre-test Ave	Average score (%) post-test B	Average score (%) post-test A	Average score (%) post-test Ave	Combined average (%)	Time variable *p*-value	Interaction *p*-value
Define basic accounting concepts	1	83	88	85	91	84	88	87	0.55	0.19
Explain the accounting cycle	2	76	74	75	76	73	75	75	0.94	0.92
Complete source documents related to cash transactions	3	68	51	61	65	44	57	59	0.45	0.77
Record cash transactions of service undertakings	4	85	63	75	73	60	68	72	0.17	0.30
Calculate cost of sales	5	76	72	75	94	82	90	82	< 0.01	0.07
Record cash transactions of trading concerns	6	85	33	63	44	84	60	62	0.70	< 0.01
Post to the ledger from cash journals	7	37	40	38	58	50	56	47	< 0.01	0.32
Analyse cash transactions and show the effect on the accounting equation	8	69	72	71	83	70	78	74	0.14	0.10
Complete source documents related to credit transactions	9	47	58	52	67	63	66	58	0.04	0.29
Record credit transactions of trading concerns	10	39	74	54	93	39	71	62	0.02	< 0.01
Post to the ledger from debtors and debtors' allowances journals	11	46	40	43	53	48	52	47	0.17	0.90
Post to the ledger from creditors and creditors' allowances journals	12	51	40	46	57	54	56	51	0.05	0.43
Analyse credit transactions and show the effect on the accounting equation	13	49	67	57	75	53	66	61	0.21	< 0.01
Calculate cost of sales	14	17	26	21	37	26	33	27	< 0.01	0.02

When considering the average score per learning outcome for Tests A and B combined, participants struggled the most with calculating the cost of sales figure on the statement of comprehensive income (content question 14). The average mark for this learning outcome was 27%. In this question participants were given the gross profit figure and the profit mark-up percentage. From these values they were requested to determine the cost of sales figure. Tests A and B included the same details, but with a different gross profit figure and a different mark-up percentage. Both the time variable and interaction *p*-values were significant with $p < 0.01$ and $p = 0.02$ respectively. This finding can be interpreted that there was a significant improvement in average score from pre-test to post-test and participants who answered this question in test sequence AB had a significantly different (i.e. better) change in their score from Test A to B than participants who answered in test sequence BA. Content questions 5 and 14 tested the same learning outcome according to the training manual. The researchers, therefore, set content question 5 to test the cost price of a unit (when given selling price and profit mark-up percentage), whereas content question 14 tested the cost of sales calculation on the statement of comprehensive income. It is, therefore, interesting to note that participants performed better in content question 5 than 14 – although the principle was in essence the same. The results show a significant improvement between the pre-test and post-test scores for content question 5 with $p < 0.01$.

Participants performed the best on content question 1 (defining basic accounting concepts) with a combined average score of 87%. However, the high average could have been a result of the fact that this was a true or false question. The fact that this question had fewer options from which to choose could have increased participants' chance of choosing (or guessing) the correct answer. There was no significant difference in the average score over time or in terms of the interaction between variables for this question.

Content question 7, which tested participants' understanding on how to post totals from cash journals to the appropriate ledger accounts, showed the best improvement in post-test average scores with $p < 0.01$ over time. An overall increase (in average mark) of 18% was reported for this learning outcome.

As reported on the findings of research question 1, content question 13 could have been interpreted differently by different participants. This observation is supported by the *p*-value of the interaction between time, test sequence and average test score, with $p < 0.01$. This interaction, again, shows that participants who answered in test sequence AB scored significantly better than participants who answered in test sequence BA. In fact, participants who answered in test sequence BA showed a sharp decline in their average score for this learning outcome from Test B (average score 67%) to Test A (average score 53%).

The last observation under research question 2 relates to content questions 6 and 10. Content question 6 focused on the recording of cash transactions, while content question 10 focused on credit transactions. Significant differences were reported for interaction between time, test sequence and average test score for both these questions, with $p < 0.01$. Test A included a purchase transaction for content question 6 (cash) and a selling transaction for content question 10 (credit). Test B was exactly the opposite, with a selling transaction in cash and purchase transaction in credit. When the ANOVA was applied to compare purchase transactions for cash versus credit, the interaction became insignificant ($p = 0.58$). The same ANOVA comparing selling transactions for cash versus credit also shows no significant difference ($p = 0.83$). The average score for purchase transactions in cash and credit was 84.62%, while the average score for selling transactions in cash and credit was 38.94%. This observation suggests that the learning outcome of cash and credit transactions might have to be reconsidered to rather distinguish between purchasing and selling transactions. It is clear that participants struggled much more with recording transactions where goods were sold than transactions where goods were purchased, irrespective of whether the transaction was for cash or credit.

These results clearly indicate that EMS teachers do not have good knowledge of all the learning outcomes of financial literacy. Teachers in this study were not considered to be entirely competent to apply higher-level thinking skills on certain transactions, which are, as reported by Schreuder (2009), some of the important skills which EMS teachers should be equipped with. This finding also agrees with Ball and Cohen (1996, as cited by Coetzee, EM 2016) that teachers teach content based on their own understanding of the curriculum (in this case, financial literacy), which is not necessarily the correct understanding.

Research Question 3: What were Participants' Perceptions of Their Own Financial Literacy Ability and Their Impression of the Workshop?

Before the start of the workshop, participants were asked whether they thought that they would perform better in a similar test after the completion of the workshop. Of the 93 participants who completed both the pre- and post-tests, 65 participants (70%) agreed that they would perform better, three participants (3%) indicated that they did not think that they would perform better, 18 participants (19%) indicated that they were not sure, and seven participants (8%) chose not to answer the question. The majority of the participants improved their test scores after attending the workshop. Of the 93 participants, 52 had an improvement in their results (56%), 26 participants' results worsened (28%) and 15 participants' results remained unchanged (16%).

Participants were also asked to react to three Likert-scale statements which related to their own ability as financial literacy teachers. Their choices ranged from strongly disagreeing to strongly agreeing with the statements. Their choices were matched with their results for the relevant pre-test. The results are summarised in Table 2 below.

Table 2 Financial literacy teachers' reflection on their own ability evaluated against results of pre-test

Likert-scale statement	Average score	Spearman *p*-value
"I think that I am a good financial literacy teacher for Grade 8 and/or Grade 9 learners."	0.33	< 0.01
"I need help to improve my understanding of financial literacy (as included in the EMS curriculum) for Grade 8 and/or Grade 9 learners."	-0.39	< 0.01
"I feel comfortable to teach financial literacy to Grade 8 and/or Grade 9 learners."	0.24	0.02

From the results it is evident that participants who believed that they were good financial literacy teachers performed statistically better in the tests than those who did not. This is an important finding seeing that teachers are deemed to deliver a curriculum from their own understanding (Ball & Cohen, 1996, cited by Coetzee, EM 2016). If teachers have a better understanding of the content, they will deliver it better to learners. Similarly, those participants who agreed that they needed help to improve their understanding of the subject performed statistically worse than the rest. No statistical difference was reported for participants who felt comfortable to teach the subject versus their performance in the test.

Participants also had to indicate what they found the biggest challenge to be with being a financial literacy teacher. Only one of the participants (1%) thought that the content of the work was too difficult and only eight participants (8%) thought that their own understanding of the work was the biggest challenge. It was interesting to find so few participants choosing these reasons given the low average obtained for the tests. The majority of participants (47%) believed that the biggest challenge of being a financial literacy teacher was the learners, which is highlighted by Ball and Cohen (1996, cited by Coetzee, EM 2016) as one of the factors that might influence the way in which a teacher delivers a curriculum. This reason was closely followed by the workload of the subject being too much (32%). The remaining participants (12%) either did not wish to answer or provided other ad hoc challenges that teachers were faced with. One of the other challenges provided by a participant was the following: "*Finding innovative ways to teach concepts to learners for effective learning, especially those who do not really enjoy the subject as a whole*."

Participants were asked to give feedback on their experience after the workshop. Some comments and our reflections on the comments are shown in Table 3. It is clear that participants felt that they gained knowledge by attending the workshop. However, there was still a need for teacher training on methods of effectively transferring their knowledge to learners, as highlighted by Klapwijk (2012).

Table 3 Participant feedback

Comment by participant (combined average score included in brackets)	Researchers' reflection
"*Focus on effective methods of transferring knowledge and skills (fundamentals) on the topics covered in financial literacy*." (96%)	The WCED and SU should consider adding teaching methodologies as part of future workshops or designing separate workshops that address this need separately.
"*Allow teachers to share their knowledge and skills. How they do things in their classroom.*" (79%)	Future workshops could include sessions where teachers can collaborate and share their experience.
"*The (workshop) was a good initiative to enhance my own financial literacy knowledge BUT next time there must be a separate one for novice teachers in EMS like me (especially accounting) …* ." (21%)	The WCED should consider evaluating teachers for such workshops according to their abilities. Teachers with less accounting experience would need slower-paced and more detailed workshops than experienced teachers.
"*… some of us never did accounting but because we have done other commerce subjects were are compelled to teach it in EMS.*" (11%)	This comment supports the findings of Schreuder (2009). It supports the notion of more regular workshops for inexperienced teachers, especially considering the average score obtained by this participant.

Conclusion

In this study we focussed on financial literacy teacher training in the form of a two-day workshop (intervention) for Grade 8 and/or 9 EMS teachers, with the aim to improve their understanding of financial literacy. When the results of participants' pre- and post-test scores were analysed, it was found that they had statistically better average scores after the workshop than before. The analysis shows that participants were very capable of defining basic accounting concepts, but that they struggled to determine the cost of sales figures shown in a statement of comprehensive income when given the gross profit figure and gross profit mark-up percentage. It was also found that teachers struggled more with transactions where goods were sold

than transactions where goods were purchased, irrespective of whether these transactions were in cash or for credit.

The feedback obtained from the participants after the workshop shows the importance of such workshops (interventions). It highlighted the fact that teachers would welcome help with teaching methodologies and suggested that those who attended these workshops should be given time to collaborate and share their knowledge and skills. Furthermore, novice teachers in financial literacy might need more than a two-day workshop to help them become better teachers.

This study shows that teacher training of EMS Grade 8 and/or 9 teachers in financial literacy should be continued. It was evident after a two-day workshop that significant progress was noted for teachers who attended the workshop. This finding should guide the WCED and other tertiary institutions to increase the number of workshops offered to EMS teachers on a regular basis. Furthermore, the results of this study should also be welcomed outside of South Africa. The shortage of accountants could possibly be addressed if accounting teachers at introductory levels of the subject were properly trained.

This research is not without limitations. Self-selection bias exists for participants who attended the workshop and decided to be part of the research study. Furthermore, this study only included Grade 8 and/or 9 teachers in one field of study and in one province of South Africa. However, in acknowledging this limitation, the findings of this study may also be applicable to EMS teachers in the other provinces of South Africa. The results report on the effectiveness of an intervention over a period of two days. A follow-up research study is encouraged after a lapse of time to test the longevity of the effectiveness of such interventions. The findings of this study should not be extrapolated without cause.

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Authors' Contribution

CG wrote the literature review and MR did the statistical analyses. Both authors collected the data and reviewed the final manuscript.

Notes

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Appendix A: Validity of Test Items

Learning outcome in training manual	Content question	Test A question	Test B question	Why are these test items (for Test A and Test B) valid?
Define basic accounting concepts	1	True/False: Assets - Liabilities = Equity	True/False: Expenses will increase Equity	The accounting equation is the foundation of accounting and financial literacy. The classification of accounts is explained on page 12 of the training manual.
Explain the accounting cycle	2	Put the following events in chronological order: 1) Financial statement 2) Ledger 3) Trial Balance	Put the following events in chronological order: 1) Source document 2) Journal 3) Transaction	The six steps of the accounting cycle (transaction, source document, journal, ledger, trial balance and then financial statement) are set out on page 6 of the training manual. EMS teachers are expected to know the order of events in the accounting cycle.
Complete source documents related to cash transactions	3	Choose the source document that will not be used to record cash transactions in the Cash Receipts Journal (CRJ) or Cash Payments Journal (CPJ).	Choose the source document that is used to record cash transactions in the Cash Receipts Journal (CRJ) or Cash Payments Journal (CPJ).	Source documents for cash transactions are set out on page 8 of the training manual. EMS teachers must be able to identify the correct documents for cash transactions.
Record cash transactions of service undertakings	4	Which general ledger accounts are debited and credited to record services rendered for cash in a "service business"?	Which general ledger accounts are debited and credited to record materials purchased for cash in a "service business"?	These test items were based on example 2 and example 6 in the training manual (page 15 and page 18).
Calculate cost of sales	5	If selling price is R108, and profit mark-up is 20%, what is cost price?	If selling price is R77 and profit mark-up is 40%, what is cost price?	The test items are based on the examples on page 24 of the training manual.
Record cash transactions of trading concerns	6	Which general ledger accounts are debited and credited to record goods purchased for cash in a "trading business"?	Which general ledger accounts are debited and credited to record the sale of trading stock for cash in a "trading business" (note: only the journal to record the cost value of trading stock sold).	These test items were included in various activities in the training manual.
Post to the ledger from cash journals	7	Choose the correct answer. (The correct answer was: The total of the "creditors" column in the CPJ is posted to the debit side of the creditor's control general ledger account).	Choose the correct answer. (The correct answer was: The total of the "debtors" column in the CRJ is posted to the credit side of the debtor's control general ledger account).	Examples of the CRJ and CPJ with a column for debtors control and creditors control is included on pages 35 and 36 of the training manual.
Analyse cash transactions and show the effect on the accounting equation	8	An entity buys inventory and pays in cash. What is the effect on the accounting equation?	The owner takes R100 for his own use from the till of his business. What is the effect on the accounting equation?	The accounting equation is explained on page 12 and 13 of the training manual.
Complete source documents related to credit transactions	9	True/False: A company issues a credit note to their suppliers when the company return goods to the supplier.	True/False: A company issues a debit note to their clients when the client return goods to the company.	Source documents and their explanation for credit transactions can be found on page 35 of the training manual.

Learning outcome in training manual	Content question	Test A question	Test B question	Why are these test items (for Test A and Test B) valid?
Record credit transactions of trading concerns	10	Which general ledger accounts are debited and credited to record the sale of trading stock on credit in a "trading business" (note: only the journal to record the cost value of trading stock sold).	Which general ledger accounts are debited and credited to record goods purchased on credit in a "trading business"?	These test items were included in various activities in the training manual.
Post to the ledger from debtors and debtors' allowances journals	11	Posting from the debtors' allowance column (in the Debtors' Allowance Journal) to the general ledger: Choose the two correct statements. (The correct answer was: Debit Debtors' Allowance with "Debtors Control" and credit Debtors control with "Debtors' allowance").	Posting from the debtors' allowance column (in the Debtors' Allowance Journal) to the general ledger: Choose the two correct statements. (The correct answer was: Debit Debtors' Allowance with "Debtors Control" and credit Debtors control with "Debtors' allowance").	The Debtors' Allowance Journal (and postings from there to the ledger) is discussed on page 37 of the training manual. The test items in Test A and Test B were exactly the same between the two tests.
Post to the ledger from creditors and creditors' allowances journals	12	Which statements are true: (The correct answer was: Creditors control will be debited with total returns and creditors control will be credited with total purchases).	Which statements are true: (The correct answer was: Creditors control will be debited with total returns and creditors control will be credited with total purchases).	These test items were exactly the same in both tests. Discussion of the creditors and creditors' allowance journal can be found on page 37 of the training manual.
Analyse credit transactions and show the effect on the accounting equation	13	A client returns trading inventory that they have purchased from us on credit. What is the effect on the accounting equation?	We return trading inventory that we have purchased on credit. What is the effect on the accounting equation?	This test item could have been interpreted differently among participants as mentioned in the findings section of this article. However, EMS teachers should know the effect on the accounting equation when trading inventory is purchased or sold.
Calculate cost of sales	14	Gross profit on the statement of comprehensive income is R200,000. If profit mark-up is 20%, what is cost of sales?	Gross profit on the statement of comprehensive income is R125,000. If profit mark-up is 25%, what is cost of sales?	The calculation of cost of sales is included on page 24 of the training manual. EMS teachers are expected to know the meaning of "gross profit" and "statement of comprehensive income."