

**Undergraduate accounting students' instructional preferences in Australia and
Zimbabwe: A comparative study**

Abstract

This study examines the instructional preferences exhibited by students in an Australian and Zimbabwean setting, and how cultural conditioning can reflect in the instructional design choice. Using graphical and textual presentations, an experiment with three instructional designs and 217 undergraduate students, this study empirically examines student understanding of financial accounting in the two countries. Student's performance scores and reported mental effort ratings were used to determine the instructional preference. The findings of this comparative study show that Australian accounting students prefer graph and text designs aligned with a low power distance while Zimbabwean students prefer graphical and textual designs associated with a high power distance. The results suggest that different people see the world in different ways and demands educators to deliver culturally sensitive and culturally adaptive accounting instructional material.

Key words: accounting, Australian, culture, instructional preferences, Zimbabwean

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1. Introduction

Many accounting educators are finding classes filled with students from diverse cultures (Sikkema & Sauerwein, 2015). Some have observed that these cultural differences among learners have a major impact on the learning process. Students appear reflective and quiet in a high participation Australian class (Kettle, 2017). In addition, learners from high power distance cultures are not comfortable calling professors by their first name (Yook, 2013). Predictably these cultural differences are taken as an obstacle to the development of beneficial learning practice. For example, participation is regarded as a way of developing independent learning skills and the capability of applying knowledge (e.g. Sivan, Leung, Woon and Kember, 2000). Individuals from low uncertainty avoidance cultures may appear comfortable with trial and error and risk while those from high uncertainty avoidance cultures may appear systematic and cautious in their approach to problem solving (Joy & Kolb, 2009). Are these cultural influences on the problem solving process empirically verifiable for students learning introductory accounting courses?

This study addresses this question by investigating how students born and educated in different cultures vary in their approaches to learning. Students from different societal cultures bring different learning styles (Hutchinson & Gul, 1997; Jackling, Howieson, & Natoli, 2012; Joy & Kolb, 2009; Sugahara & Boland, 2010). Hutchinson and Gul (1997) showed societal cultural differences associated with the ways students analyse knowledge. Joy and Kolb (2009) argued that the culture a person lives in is an inescapable part of the environment in which he or she lives. It influences information processing and cognition (Saxe, 2015). Thus it is reasonable to believe that cultural socialisation tends to influence learning preferences (Hofstede, 2016; Joy & Kolb, 2009).

When considering cultural influences on learning, we must recognise that there are three levels of culture that influence perceptions and learned behaviour patterns (Jung, 2014). First, cultural traditions distinguish a specific society, for example, beliefs and inherited language. Second, there are subcultural traits such as how people dress, communicate or relate with each other. Finally, there are cultural universals which relate to learned behaviour patterns that are shared by all of humanity, for example, the organisation of families and social groups, and the establishment of some form of leadership roles. The major challenge in adopting and sharing instructional design across cultures is establishing where cultural universals apply and where subcultures will influence the learning process and the learning outcomes. Cultural factors, to a large extent influence not only what is learnt but how to apply different strategies of attention, planning, problem solving and memory (Kearins, 1986).

Our overarching argument is that adopting culture-based instructional designs that have worked in other learning environments may not be appropriate in others. Recognising which instructional designs will be most effective for a particular cultural group of students is discussed. The remainder of the paper is structured in the following manner. In Section 2, the literature on culture and learning styles is reviewed, and the research hypotheses are developed. In Section 3, the research method and the experiments are presented. Section 4 presents the results and the last section provides the conclusion.

2. Culture and learning

Some studies have explored the historical evolution of cultural clusters that transcend national boundaries (House et al., 2004; Joy & Kolb, 2009; Peterson & Smith, 2008). Others have focused more narrowly on in-country societal culture, resulting from the development of

nation states bounded by governing structures, law and social institutions that has increased cultural homogeneity (Hofstede, 2016; House et al., 2004). Hofstede (2016) showed that each member nation's societal culture is unique considering individual societal culture dimension, although it is possible to cluster member nations by applying a range for a given societal culture dimension.

The body of knowledge about the societal culture as a determinant in learning spans across several disciplines; Accounting (Abeysekera, 2008, 2015a; Sikkema & Sauerwein, 2015; Sugahara, Watty, 2016), management (Dalton, Bhanugopan, & D'Netto, 2015; Choi, Oh, & Colbert, 2015; Ramadan, & Joseph, 2015), psychology (Pattaratanakun & Mak, 2015), science (Sugimoto & Swain, 2016), and sociology (Small, Harding, & Lamont, 2010; Thompson, Hickey, & Thompson, 2016). These studies take a definition of societal culture as shared motives, values, beliefs, identities, and interpretations or meanings of significant events resulting from common experiences of members of collectives that are transmitted across generations (House et al., 2004).

Culture is the way through which people make sense of the world, it is the context within which we operate and it influences how we process learning and solve problems (Munro, 2012; Perso, 2012). How a student learns is influenced by the culture in which the learning occurs and the social interaction processes in which the learner engages. It is these cultural interactions rather than the instructional process alone that determine the quality of the learning outcome. Dahms et al (2007) stressed the importance of past experiences and prior knowledge in making sense of new situations or present experience. The making sense of knowledge and newly introduced skills are greatly influenced by each student's cultural setting, the family as a small unit and society as the large unit of organisation. There is

abundant literature demonstrating that societal cultures have identifiable goals, dimensions, expectations, variations in modes of communication, learning styles, and the impact on learning (Watson, 2013; Hunt & Tickner, 2015).

Research show that societal culture influences student learning (Abeysekera, 2008, 2015a; Nisbett, 2003; Hwang & Shih, 2015). Nisbett (2003) shows that deeply rooted societal cultural values influence thinking, and students bring those thinking patterns to learning. Contrary to the possibility that students might prefer the traditional instructional method because of the societal cultural setting (Hwang et al., 2008), Abeysekera (2008) showed that students prefer the interactive instructional method in learning accounting courses with high algorithmic rigor.

Nisbett (2003) identifies cultural diversity as being prominent among learners, perhaps owing to deeply rooted cultural values and modes of thinking that are difficult to separate from learning processes. For example, Wong (2004) showed that Asian students' adapted quickly to new learning styles and attributed the quick adaptation to societal culture. Abeysekera (2008) used Hofstede's (1980, 2001) cultural dimensions and surveyed 296 students to determine student learning preferences. The findings showed that the length of stay of international students in the foreign university influenced their learning preference. They concluded that the length of study in the foreign university acclimatised them to the preferred learning format in that societal culture.

This study contributes to the current understanding by acknowledging that some of accounting students studying is influenced by what occurs outside the classroom. Accounting learning material is often found in split format requiring students to split their attention within

and across pages in order to understand concepts, procedures, and applications. In the passive, outside classroom learning environment, students' societal culture can influence how they deal with split attention and self-manage their learning. Understanding the influence of societal culture on learning allows design instructions that facilitate the societal cultural inclinations of learning to decrease students cognitive load.

Hofstede's (2016) research differentiated about 40 countries on the basis of societal culture and identified power distance, uncertainty avoidance, masculinity femininity and individualism-collectivism as the major dimensions on which cultures differ. Gray (1988) is one of the first to address cultural difference in the process of classifying diversities of accounting standards and systems within nations. Gray's study was based on Hofstede's (1983) cross-cultural study, which demonstrated that a country's culture is expected to be a crucial factor in shaping its residents' preferred ways of learning (Hofstede, 1983).

Hofstede's theory has five cultural dimensions of Power Distance (PDI), Individualism (IDV), Uncertainty Avoidance (UAI), Masculinity (MAS), and Long-term Orientation (LTO). Power distance (PDI) basic issue is that human inequality can occur in areas such as wealth, power and prestige. Distinct societies place different measures on the status among these different areas (Hofstede, 2001). Individualism (IDV) describes the relationship between the individual and the collective notion that prevails within a given society (Hofstede, 2016). Uncertainty avoidance (UAI) is based on uncertainty regarding one's future. Uncertainty is basic to human life as one tries to cope through the domains of religion, law and technology (Hofstede, 2001). Masculinity (MAS) does not refer to gender egalitarianism, but to higher ambitions assertiveness and competitiveness (Hofstede, 2016). Long-term orientation (LTO) is oriented toward the virtues of future

rewards based on perseverance and thrift, resulting from the past and present such as respect for tradition, preservation of face and fulfilling social obligations. There is emphasis on practice and good behaviour as specified by the tradition in each cultural phase (Hofstede, 2016).

The primary purpose of this study was to investigate the role that Power Distance has on learning for accounting students in two different nations. This is the first part of four studies which will investigate power distance, uncertainty avoidance, masculinity femininity and individualism-collectivism as the major dimensions on which cultures differ in Australia and Zimbabwe.

3. Hypothesis Development

Financial Accounting is a subject that has a lot of concepts expressed through sophisticated principles (Abeysekera, 2008). Students have to think deeply and reflectively to understand the concepts. Learning these concepts exert a massive cognitive load on students who have not encountered the accounting concepts before.

Accounting instructional material is typically presented in a way that requires splitting attention to understand the concepts. For example, there are footnotes to diagrams and instructional material show journal entries which are followed by textual explanations. Students must combine the journal entry information with explanations found elsewhere in the text to understand the logarithmic concepts behind accounting (Sithole, 2016). How much a given student learns in an accounting class is governed in part by that student's prior preparation and cultural setting.

Hofstede defines culture as collective programming of the mind that distinguishes one group or category of people from others (Hofstede, 2016). Zimbabwe is a country neighbouring Zambia and is a Southern African country. Zimbabwe (then called Rhodesia) was the southern part of Zambia that was politically separated as a governing British colony (Indexmundi, 2016). Although Hofstede has not assigned cultural dimension scores to Zimbabwe, the cultural dimensions scores of Zambia is a good approximation.

Zimbabwe is a higher power distance country (60) compared to Australia (36) (Hofstede, 2016). Zimbabwe people accepts the authority as given but the Australian society finds ways of equitably distributing power and if necessary, challenges the status-quo. Zimbabwe is weak in individualism (35) compared to Australia which is high on individualism (90). The low individualism in Zimbabwe indicates Zimbabweans emphasis on harmony than self-expressions. These two cultural dimensions show that Zimbabwean students are likely to accept the status-quo for harmony, whereas Australian students pursue an individualistic path for greater self-expression.

We argue that Zimbabwean students use the instructional material provided as an authoritative piece of work, and tolerate the learning difficulties associated with the need to split attention in collating information to learn from the instructional material. Zimbabwean students will accept the status-quo of the instructional material provided as authoritative guidance for outside classroom studies, consistent with their societal culture. Australian students will not accept such status-quo and use the instructional material provided as a learning tool to self-manage their learning. Based on this premise, we state the following hypothesis.

H1: Zimbabwean students perform better than Australian students under split-attention learning format.

If the split information in the instructional material is integrated, it becomes the new norm of harmony for those students learning from the instructional material provided. We argue that integrated learning format that combine the otherwise disparate information requiring split attention to learn, decreases Zimbabwean students' cognitive load leading to increased learning and better examination performance. Integrated learning will improve not only the short-term learning but also the long-term learning (understanding) because integrated format will provide Zimbabwean students a more meaningful understanding of accounting concepts. Based on these arguments, we state the hypothesis as follows.

H2: Zimbabwean students perform best under integrated learning format.

Australian students on the other hand use self-management to aid their learning. They will combine split information in the instructional material by using arrows, diagrams, charts and any other means that will facilitate their learning. The primary and secondary education inculcates constructivist approach of learning to Australian students through their primary and secondary education, and it becomes a norm for them in higher education learning (Donnelly & Wiltshire, 2014; Rowe, 2006). We argue that integrating information otherwise requiring eliminating the split-attention, does increase their learning because Australian students are individualistic and want to manage their learning. We argue that Australian students will still prefer self-managing their learning. Based on these arguments, we state the hypothesis as follows.

H3: Australian students perform best under self-management format.

4. Operationalisation of the constructs

4.1.1. Culture

The use of nations for the cross-cultural study as units of analysis has been used in several recent studies (e.g. Joy & Kolb, 2009; House et al., 2004; Minkov and Hofstede, 2013). Countries tend to form homogeneous and distinct national clusters. Similar to many studies, we operationalized societal culture in the context of 'countries'. The 'culture clusters' empirically arrived at in the GLOBE study (House et al., 2004) distinctly categorise Zimbabwe and Australia into two separate clusters "Sub-Saharan Africa" and "Anglo" respectively.

The decade long GLOBE study (House et al., 2004) identified the Australian culture under the "Anglo" (English-speaking) cluster of countries, and was characterised by low power distance (House et al., 2004). The Zimbabwean culture had high power distance (House et al., 2004). Besides the authors' familiarity with accounting programs in Australia and Zimbabwe, these two countries were also chosen due to acknowledged diversity (House et al., 2004).

4.1.2. Learning style preference

Studies of education in developing countries such as Zimbabwe often note the dominance of didactic, lecture and fact-oriented teaching methods in schools (e.g., Shizha, 2007; Westbrook et al., 2013). Such methods are typically observed to provide little opportunity for meaningful interaction between students and the teacher. In traditional African societies children have clearly defined social roles and for a child to speak out in the presence of a respected elder without being first recognized and asked to speak would be considered highly inappropriate (Mhaka-Mutepfa, Maree, & Chiganga, 2014). It is apparent that instructional

design in the Zimbabwean environment would have to take into consideration such cultural influences which are likely to align with the conventional split attention instructional design.

In Australia, the rules for social interaction between children and adults are very different and the child who does not initiate conversation with an elder may be considered shy, timid or lacking in self-confidence. The Australian culture strongly encourages children to challenge ideas and develop their own independent beliefs (Shahaeian et al., 2014). It seems reasonable to believe that students in the Australian culture will prefer self-management instructional design where learners can use strategies to self-manage cognitive load when dealing with instructional materials with evident split attention.

4.2 Participants and design

Two hundred and seventeen first-year undergraduate students were recruited from a Zimbabwean university (57 males and 56 females, $M = 21.04$ years old, $SD = 2.42$) and from an Australian university (64 males and 40 females, $M = 21.45$ years old, $SD = 3.90$). The response rate was 78.42% and 86.33% from Australian and Zimbabwean participants respectively. Approval for human subjects research was obtained from the Human Research Ethics Committee at the two universities. Students participated voluntarily in the study, and they were not paid for participation. They had been informed of the study one week prior to the questionnaire being administered. This study only used students whose birthplace was either Australia or Zimbabwe. The questionnaires were initially distributed to all students who attended introductory accounting during class time regardless of their major or nationality. The responses were collected immediately upon completion. After collection, only students who were born and studied in either Australia or Zimbabwe were identified, extracted and used in this research.

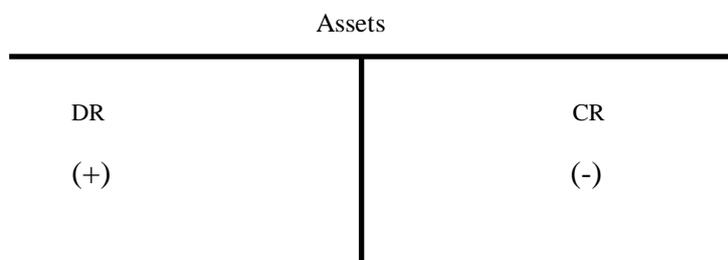
At the start, before the questionnaires were distributed, the researchers explained the organisation and reasons for the survey. Students were informed that participation was voluntary and that the results from the experiment were not part of the subject's assessment, and that data collected would be used anonymously. The survey did not solicit respondents' names and their ID's. The students were given participant information sheets and consent forms. They signed the consent form stating their written agreement to take part in the study. Students who agreed to participate completed the questionnaire in class. The participants answered questions about their age, gender, first language, birth country and knowledge of accounting. This took students ten minutes to complete. Completion of the rest of the questionnaire took 45 minutes.

A power analysis using the Gpower computer program (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a total sample of 35 people would be needed to detect large effects ($d = .8$) with 95% power using a t-test between means with alpha at .05. Guided by the minimum sample size to detect large effect sizes, the study randomly assigned participants to one of the three groups. There were 77 students in the split-attention group (Australian group, 36 and Zimbabwean group, 41), 62 students in the integrated group (Australian group, 32 and Zimbabwean group, 30), and 78 students in the guided self-management group (Australia group, 36 and Zimbabwean group, 42).

4.3 Materials and procedure

The instructional materials explained the basic accounting equation, the debit and credit rules, and their effect on the basic accounting equation. The instructional materials were obtained from an accounting textbook (Weygandt et al., 2010, pp. 53-54) in the form of split-attention, but formatted as follows for each of the two conditions:

Group 1— split attention: The instructional material (split-attention format) was similar to that found in the textbook. An example of the material used in the current study is illustrated in Figure 1.



Assets

To increase (+) the balance in the asset accounts, you debit by entering the amount on the left hand side.
 To decrease (-) the balance you credit by entering the amount on the right hand side.
 Debits to a specific asset account should exceed the credits to that account. The normal balance of an account is on the side where an increase in the account is recorded. Thus asset accounts normally have debit balances.

Figure 1. Example of conventional split-attention format

Group 2—integrated group: The instructional material in group 2 was presented in a format that integrated the diagram with the text (see Figure 2). The content was reformatted to decrease split-attention by bringing the text as close as possible to the diagram (integrating). The integrated material was developed after reviewing the research concerning split-attention (e.g., Agostinho et al., 2013; Ayres & Sweller, 2005; Roodenrys et al., 2012; Tindall-Ford et al., 2015). An example of the material used in the current study is illustrated in Figure 2.

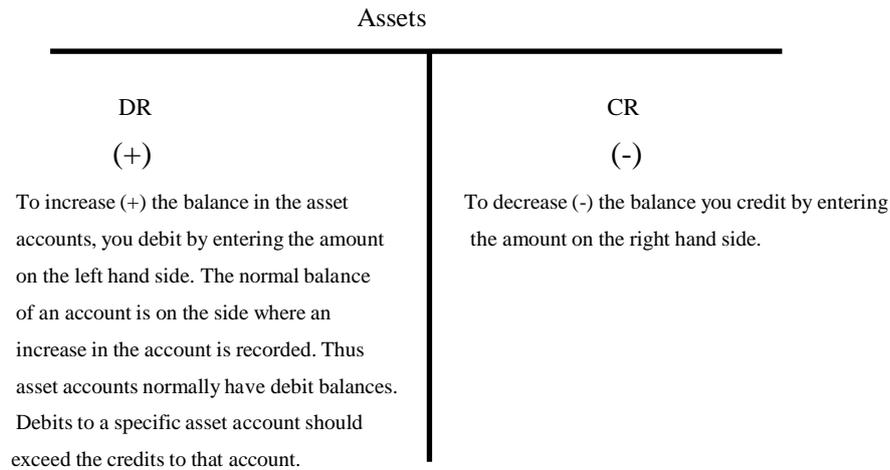
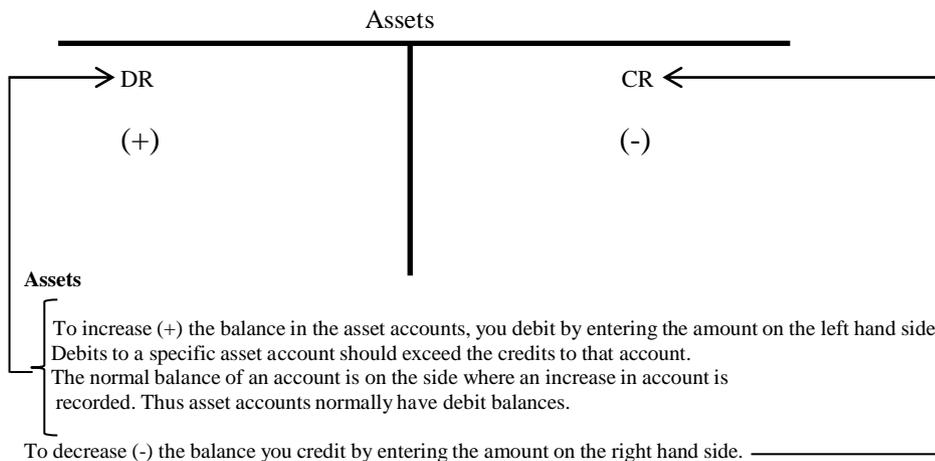


Figure 2. Example of integrated format

Group 3 – guided self-managed format: Instructional materials were developed in a way that enabled participants to integrate the diagram with the text. An example of the material used in the current study is illustrated in Figure 3. The material contained guidance (As shown in Figure 3). Participants in Group 3 were explicitly asked to implement the guidance before attempting to learn the materials. The techniques for self-management were extensively researched by Roodenrys et al. (2012) and can be considered the common, current method of self-managing cognitive load.



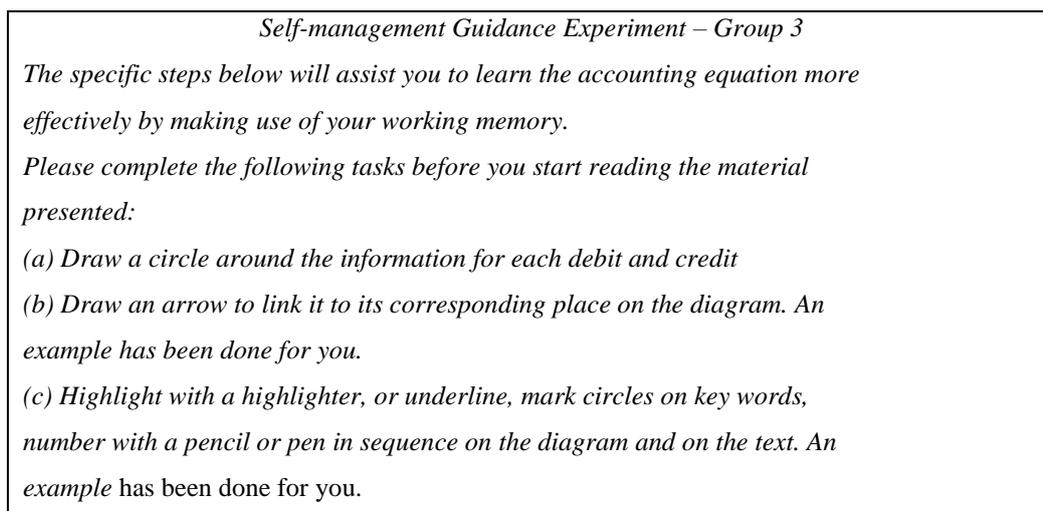


Figure 3. Example of Guidance on self-management and instructions.

The participants in the study were required to complete the experiment manually using pencil and paper. The study had three phases: pre-test, learning phase, and test phase. At the start of the study participants completed a pre-test questionnaire. In the learning phase, the participants were given 15 minutes to review the learning materials. In the test phase, the researcher administered the test that was formatted as a single sided A4 booklet. The test consisted of 28 recall and 11 transfer items. The participants were given 45 minutes to complete the test. They received two A3 pages of learning materials that contained learning instructions. The learning instructions differed among the three groups. During the test, as they completed the test questions they were also required to state the mental effort needed to complete the question. The responses helped us to evaluate the extent of two aspects of student performance; recall of learning content and transfer of knowledge by solving problems in different situations. The mental effort ratings helped us to relate to the effort students exerted to attain performances.

A recall question in the test phase required students to write the basic accounting equation. Recall questions compel students to retrieve the acquired knowledge (Carpenter, 2012). An example of a transfer question is; In May, Company XY records the transaction by a debit to Accounts Receivable for \$10 000 and a credit to Service Revenues for \$10 000. What is the effect of this entry upon the accounting equation for Company XY? The demands of transfer questions were higher than recall questions and tested the ability to transfer acquired knowledge. Transfer questions expected a student to apply the knowledge acquired during instruction to a new situation (Collins, 2014). Participants provided mental effort ratings after the learning phase and after attempting every question as outlined by Paas (1992). Participants wrote answers on the blank spaces immediately below the questions. The test booklets were collected soon after the students completed the tasks.

4.4 Pilot Study

A pilot study was conducted before the main experiment. The aim of the pilot study was to refine instructional guidance, instructional content, and to estimate the time that participants would take to complete each phase of the studies. Three students from Australia and three students from Zimbabwe participated in the pilot study. The six students did not participate in the main study. The time limit, for both the learning phase and test phase, was determined in the pilot study. The time given to complete the test was strictly controlled to avoid the possibility of a systematic difference in processing time between the split-attention and guided self-managed groups. Research has demonstrated that processing time is positively related to recall (Barrouillet, Bernardin, Portrat, Vergauwe, & Camos, 2007).

4.5 Rating of Mental Effort

After students completed the instructional materials, they were asked to rate the mental effort associated with the learning task. To measure mental effort, this study used Paas and Van Merriënboer's (1994) 9-point subjective rating scale. This is an established scale to measure the level of overall cognitive load (Ayres & Paas, 2012; Van Gog & Paas, 2008). Mental effort ratings were solicited from participants at the end of the learning phase and after each question in the test. The ratings on the levels of mental effort were used as the measure of mental effort (Paas et al., 2003; Van Gog & Paas, 2008).

4.6 Compliance Measures

Compliance was an additional measure included in the analysis for participants allocated to Group 3 (the guided self-managed format) of the study. Compliance refers to the participant's use of the guidance attached to the instructional materials. Evidence of compliance involved examination of the instructional materials (A3 sheets of paper) to determine if participants implemented the instructional guidance provided to participants to assist guided self-management. Participants were considered 'compliant' if they highlighted material with a highlighter, underlined material, or marked circles on key words with a pencil or pen.

5. Results

5.1 Descriptive statistics

The data were analysed with one-way analysis of variance (ANOVAs) with code 1 (i.e., split-attention instruction), 2(integrated instruction), and 3 (i.e., guided self-managed instruction) representing the levels of the between-subjects factor instructional format, to determine its effects on recall, transfer, and mental effort. These three settings equate to three experiments. The alpha level was set at .05 ($p < .05$) when evaluating tests of statistical significance. To

measure effect size, Cohen's d was calculated, with values of .10, .30, and .50 characterizing small, medium, and large effect sizes, respectively (Cohen, 1988).

Table 1. Descriptive Information

| Country | Australia | Zimbabwe | Total |
|--|-------------------------|------------|-------------|
| <i>N</i> | 104 | 113 | 217 |
| Age ($t = -0.968, p = 0.087$) | | | |
| Max | 32 | 46 | 46 |
| Min | 19 | 18 | 18 |
| Average | 21.45 | 21.04 | 21.23 |
| Gender ($\chi^2 = 2.703, p = 0.10$) | | | |
| Males | 64(29.50%) [†] | 57(26.30%) | 121(55.80%) |
| Females | 40(18.40%) | 56(25.80%) | 96(44.20%) |
| SD | 2.66 | 3.65 | 3.34 |
| ‡Knowledge of accounting $F(0.405) = 0.525$) | | | |
| Mean | 2.100 | 2.070 | 2.083 |
| SD | 0.296 | 0.290 | 0.293 |

Note. [†] Percent of total [‡]Actual responses were 1 to 5 for knowledge of accounting.

Table 1 reports the descriptive information of the data. To examine comparability between the two countries, this study used a t -test to investigate the differences in age and Chi-square tests to investigate differences in gender and one-way analyses of variance (ANOVAs) for knowledge of accounting. The results of these preliminary analyses revealed no significant differences in age ($t = -0.968, p = 0.087$), gender ($\chi^2 = 2.703, p = 0.10$) and knowledge of accounting $F(2, 215) = 0.405, p = 0.525$) between Australian and Zimbabwean students. Such attributes cleared questions of homogeneity among the student groups.

Table 2 shows means and standard deviations for performance measures in the experiment based on one-way ANOVAs. Recall scores showed a significant main effect between the split attention groups; $F(1, 75) = 55.56, p < 0.05$, effect size partial $\eta^2 = 0.43$. Mean recall showed that the Australian split-attention group had lower scores than the Zimbabwean group.

5.2 Performance Measures

5.2.1 Split Attention Instructional Materials

Table 2. Means and Standard Deviations for Pre-test Responses, Recall and Transfer Test Scores as a Function of Instructional Condition

| | Experiment | | | |
|--|------------|-------|----------|-------|
| | Australia | | Zimbabwe | |
| | Mean | SD | Mean | SD |
| Performance | | | | |
| Recall performance [†] | | | | |
| Split-attention [‡] | 58.61 | 12.27 | 80.46 | 13.31 |
| Integrated [§] | 56.47 | 10.83 | 70.87 | 16.10 |
| Guided Self-managed [¶] | 81.66 | 11.56 | 60.07 | 14.30 |
| Transfer performance ^{††} | | | | |
| Split-attention | 31.47 | 20.54 | 68.34 | 23.81 |
| Integrated | 53.75 | 21.52 | 64.47 | 18.79 |
| Guided Self-managed | 71.55 | 18.62 | 35.00 | 23.15 |
| Mental effort Rating^{**} | | | | |
| Learning Phase | | | | |
| Split-attention | 6.41 | 1.58 | 3.78 | 1.59 |
| Integrated | 5.31 | 1.45 | 2.21 | 1.34 |
| Guided Self-managed | 6.43 | 1.60 | 3.86 | 1.65 |
| Recall | | | | |
| Split-attention | 6.55 | 0.96 | 1.90 | 1.04 |
| Integrated | 5.59 | 1.26 | 4.13 | 1.35 |
| Guided Self-managed | 7.47 | 0.95 | 2.76 | 0.96 |
| Transfer | | | | |
| Split-attention | 5.39 | 0.93 | 2.92 | 0.91 |
| Integrated | 4.71 | 1.40 | 4.33 | 0.96 |
| Guided Self-managed | 7.83 | 0.66 | 5.60 | 1.51 |

Note. [†]Actual raw score ranges were 0 to 28 for recall, [‡] Split-attention group Australian group $n = 36$ and Zimbabwean group $n = 41$, [§] Integrated group, Australia $n = 32$, Zimbabwe $n = 30$ [¶] Guided Self-managed group, Australia $n = 36$, Zimbabwe $n = 42$, ^{††} Transfer performance raw score ranges: 0 to 11, ^{**} Mental effort rating range: 0 to 9.

Consistent with Hypothesis One (H1), the Zimbabwean split-attention group performed significantly better, $d = 1.671$, indicating a large effect size. The one-way ANOVA for split-attention transfer questions also demonstrated a significant main effect of group; $F(1,75) = 52.20$, $p < 0.05$, and effect size partial $\eta^2 = 0.410$. Again the Zimbabwean students in the

split-attention group performed significantly better than the Australian group, $d = 1.66$ on transfer tasks.

5.1.2 Integrated Instructional Materials

As shown in Table 2, one-way ANOVA for recall scores showed a significant main effect between the Australian and Zimbabwean integrated groups for the recall test items; $F(1, 60) = 17.258, p < 0.05$. The Zimbabwean integrated group performed significantly better than the Australian group, $d = 1.05$, indicating a large effect size. The one-way ANOVA for transfer questions also demonstrated a significant main effect between the Australian and Zimbabwean groups; $F(1,60) = 4.339, p < 0.05$. The Zimbabwean students in the integrated group performed significantly better than the Australian group, $d = 0.53$ with a large effect size. These results support Hypothesis 2 (H2).

5.1.3 Self-Management Instructional Materials

Results of the compliance measures indicated that 92% of the participants in the two guided self-management groups followed the guidance about how to self-manage split attention. Compliance referred to the participant's use of the guidance attached to the instructional materials for the self-management group. Students were considered 'compliant' if they highlighted material with a highlighter, used arrows to link text and diagram, underlined material, or drew circles to mark key words with a pencil or pen. The means and standard deviations for recall and transfer mental effort rating for the test phase are shown in Table 2.

The one-way ANOVA for recall scores showed a significant main effect between the Australian and Zimbabwean guided self-management groups for the recall test items; $F(1, 76) = 52.58, p < 0.05$, effect size partial $\eta^2 = 0.409$. The Australian guided self-managed

group performed significantly better than the Zimbabwean group, $d = 1.66$, indicating a large effect size. The one-way ANOVA for transfer questions also demonstrated a significant main effect between the Australian and Zimbabwean groups; $F(1,76) = 57.70$, $p < 0.05$, and effect size partial $\eta^2 = 0.432$. The Australian students in the guided self-management group performed significantly better than the Zimbabwean group, $d = 1.74$. These results support the Hypothesis 3 (H3).

6. Discussion

6.1 Student's performance under different instructional formats

Results show that best format for the Zimbabwean students was the integrated learning format. Recall performance is also highest with the integrated format, showing that the integrated format helped Zimbabwean students to perform better with recall memory to perform well in an examination requiring route memory. Transfer performance is also highest with the integrated format, demonstrating that integrated format helped Zimbabwean students understand and perform well in an examination requiring critical and reflective thinking. For the mental rating of each question, Zimbabwean students informed that they perceived less learning difficulty (low mental effort rating) for the short-term learning and long-term learning.

Australian students performed best in their learning with a guided self-managed instructional design. They outperformed Zimbabwean students on a recall test and a transfer test. The measurement of mental effort associated with questions attempted indicate that students in the Australian guided self-managed instructional group reported significantly higher mental effort scores. The Zimbabwean self-management group reported lower perceived mental effort. Mental effort is increased by the need to mentally integrate several sources of

information (Ayres & Sweller, 2005). Australian students reported significantly more mental effort than Zimbabwean students. Although Australian students are used to constructivist approach of self-managing their learning, student-centred learning of moving text during the test phase require more mental effort but results in better student performance. Also, the high uncertainty avoidance cultures can appear cautious and systematic in their approach to problems while those from low uncertainty avoidance cultures seem more comfortable with risk and trial and error problem solving (House et al., 2004).

The One-Way ANOVA results revealed significant preferences between students' learning in the guided self-management and split-attention instructional design. The high performance score for the Australian guided self-management group indicate that students prefer to learn by doing while the high score in the Zimbabwean split-attention group suggests that they follow the authoritative status-quo in the instructional material. This is consistent with the instructional principles derived from literature which posits that Zimbabwean students are expected to obey the teacher (Hofstede, 2001; Jambor, 2005). The social and cultural norms combined with the education system promote tacit acceptance rather than active experimentation (Joy & Kolb, 2009). The finding of higher recall and transfer performance by Zimbabwean students in the split-attention group compared to the Australian students can possibly explain students preference to the traditional instructional method influenced by the societal cultural setting (Hwang et al., 2008).

The key question in this study was whether the societal cultural influences outside the classroom have an effect on learning. This study operationalised the constructs of culture and learning style preference as manipulated variables in an experimental setting, to predict the influence of national culture on the preferred accounting instructional formats. Results

suggest that Australian students prefer the self-management instructional format while the Zimbabwean students prefer the split-attention instructional format and integrated instructional format.

Results are consistent with societal cultural differences found in Australia and Zimbabwe. The high power distance social hierarchies in the Zimbabwean setting provides individuals with limited freedom to make their own decisions. Zimbabwean students recorded significantly lower mental effort with split-attention and integrated instructional formats. Both formats follow instructor-led teaching. Split attention format is the authoritative status-quo of the instructional material accepted by Zimbabwean students. However, if the instructional material follows an integrated content design, it becomes the new authoritative status-quo with instructor-led teaching for Zimbabwean students. Australian students performed significantly better than Zimbabwean students in the self-management instructional format. The constructivist approach of Australian educational curriculum from schools to universities has developed capabilities in Australian students to self-manage their learning. The fact that Australian students reported higher mental load when self-management format is consistent with greater mental effort required from students in student-led learning. The findings from this study shows that different learning formats can have a significant effect on learning and mental effort exerted in learning, in two different cultural settings.

7. Conclusion

Accounting students spend two-thirds or more of their learning time outside the classroom, and the prescribed instructional material becomes the 'outside classroom instructor'. The content presented in an integrated learning format can facilitate learning of Zimbabwean

students with a cultural setting of high power distance. Australian students with low power distance perform best by self-managing their learning. These findings can be useful in designing accounting content. Instructional preference in one culture may be culturally inappropriate in another. Different learning formats in the instructional material can facilitate learning in different societal cultures.

Future research can investigate the preferred learning formats in cultural settings that do not represent Zimbabwe and Australia. Future studies could also investigate different instructional methods that enhance student's performance besides integrating separate text and diagrams. It should be noted that we operationalised culture as "nations", different regions or continents may be used to denote culture. Finally, the impact of other variables, such as other institutional and environmental factors prevailing in a country and individual personality factors, may also help to explain differences in the preferences of instructional designs for accounting students. In our study societal cultures associated student-led curricula and teacher-led curricula. There can be societal cultures that do not fit the norm, and conducting learning format experiments can yield interesting results.

Nevertheless, the results provide support to the notion that Zimbabwean accounting students are more conservative and collective than their Australian accounting students counterparts. The study further provides evidence that whilst designing universally acceptable accounting instructional material is important, cultural factors have an effect on how accounting students from various cultural backgrounds interpret and learn from these sources.

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