Multiple Intelligences of Students Taking a Course in Integrated Case Study

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Abstract: Understanding students' cognitive and personality attributes is vital in the educational industry as students posses different and mix kinds of intelligences, personalities and behaviors in classrooms. Using Gardner (1983) model of seven intelligences encompassing linguistic, logical, musical, kinesthetic, visual, interpersonal and intrapersonal, a test was conducted on twenty-two bachelor accounting students to discover and understand their differences in learning, remembering, performing and understanding in a given case study. The resulting effect, when a lecturer understands and identifies the students' common cognitive strengths and personalities, is the lecturer will be able to design not only the teaching and learning approaches that suit the students' capabilities but also the method in which the students prefer to learn and develop their strengths and weaknesses in a more constructive manner. Additionally, the lecturer can effectively assess the students' performance in classrooms. Test results indicated that the students' intelligences and personal potentials are linguistic (29%), logical (15%), musical (14%), kinesthetic (14%), visual (14%), interpersonal (13%) and intrapersonal (15%). It can be concluded that the bachelor accounting students have mix intelligences and are capable of achieving their potentials in the accounting profession.

Keywords: cognitive strength, cognitive weakness, mix intelligence, multiple intelligence, student performance

1.   Introduction

Accounting education is continuously evolving due to the changing business environmental landscapes. This scenario creates pressures in adapting with the changes in the industry. Students and academics are not spared with these environmental changes where the need match and adapt arises by devising educational approaches to ensure successful training of future accountants. This Multiple Intelligence (MI) survey is conducted using the Gardner (1983) multiple intelligence models.

Gardner has identified seven (7) intelligences encompassing linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial–visual, interpersonal and intrapersonal to understand better the students' way of learning. The MI model found that students possess different kinds of mind as such they learn, remember, perform and understand in different ways. This model challenges the educational system that assumes every student can learn the same materials in the same way and that a standardised measure is sufficient to test student's learning level.

The purpose of this study is to understand the accounting students' distinctive intelligences or learning styles and experiences to serve them better in classrooms. With this, academics are able to design strategies that can assist the students to become more participative in teaching and learning. Moreover, the study helps to elucidate the ways in which students can learn accounting better.

Reviews of the literatures indicated that learning styles is an indicator of how the students perceive, interact with, and respond to the learning environment (Sims and Sims, 1995); that there are individual differences in learning (Kolb, 1984); approaches to learning differ due to differences in learning styles (Csapo and Hayen, 2006); and students learn best when they are taught and learn in a manner consistent with their primary and secondary learning styles (Dunn and Dunn, 1978).

Romanelli et. al. (2009) pointed out that individual tailoring of an educational program to student learning is necessary as mismatches between lecturer and students is a learning obstacle and teaching cannot be successful without a knowledge of learning styles and strategies (Sarasin, 1999). However, it was discovered that teachers stopped matching children learning styles after one year of teaching (Stahl, 1999). Likewise, there is no significant relationship between learning abilities and academic success (Suliman, 2010)

The MI model of Gardner (1983) has been criticized for using simple reflective assessment that requires no complex computations. Nonetheless, no model is perfect at present and MI model allows the author to understand and elucidate better the varied intelligences or learning styles of the accounting students in order to improve the teaching and learning environment in the classroom. Understanding the students' learning styles as well as their behavior and working styles are indicators of students' capabilities to learn accounting that suits them better.

2.   Research methodology

The Howard Gardner's MI test was administered to 22 Bachelor Accounting students enrolled in Integrated Case Study (ICS) course at the Jengka Campus of Universiti Teknologi MARA (UiTM) Pahang in March – July 2013 semester. The students were asked to complete a self-calculating format consisting of 70 statements at http://www.businessballs.com. There were 11 female and 11 male students who completed the survey. Thereafter, the MI self-generated results are matched with the ocular observation results on the same intelligence perspectives to give careful and meaningful interpretations or significances on the students' mental and psychological behaviors toward learning.

3.   Findings and Discussions

Findings reveal that accounting students have different MI strength as shown in Figure 1 and Figure 2. Unlike Figure 1, which highlights the MI test scores for each of the seven multiple intelligences; Figure 2 depicts the MI test in percentage for comparability purposes. These results have important implications in the education of accounting students.
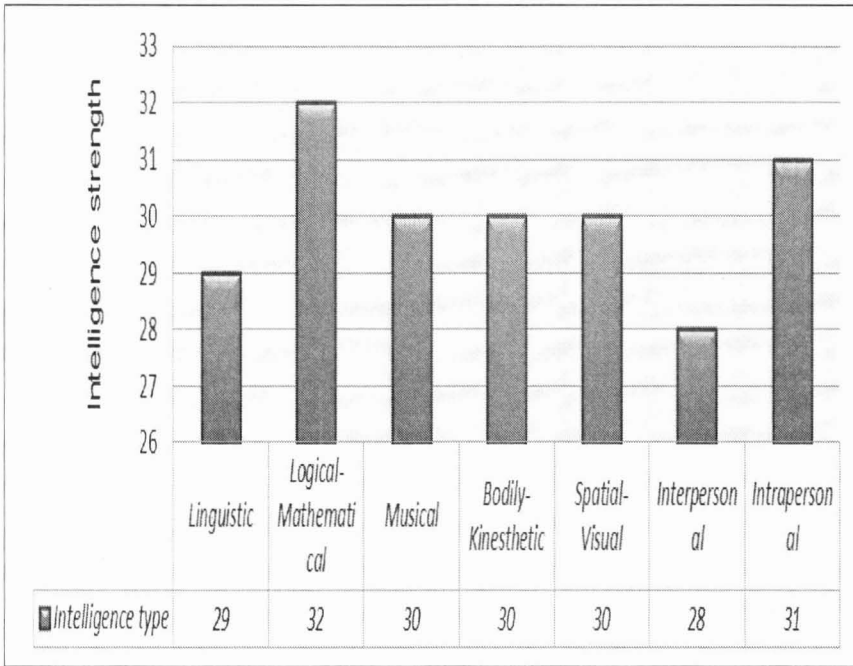
	Linguistic	Logical-Mathematical	Musical	Bodily-Kinesthetic	Spatial-Visual	Interpersonal	Intrapersonal
▨ Intelligence type	29	32	30	30	30	28	31

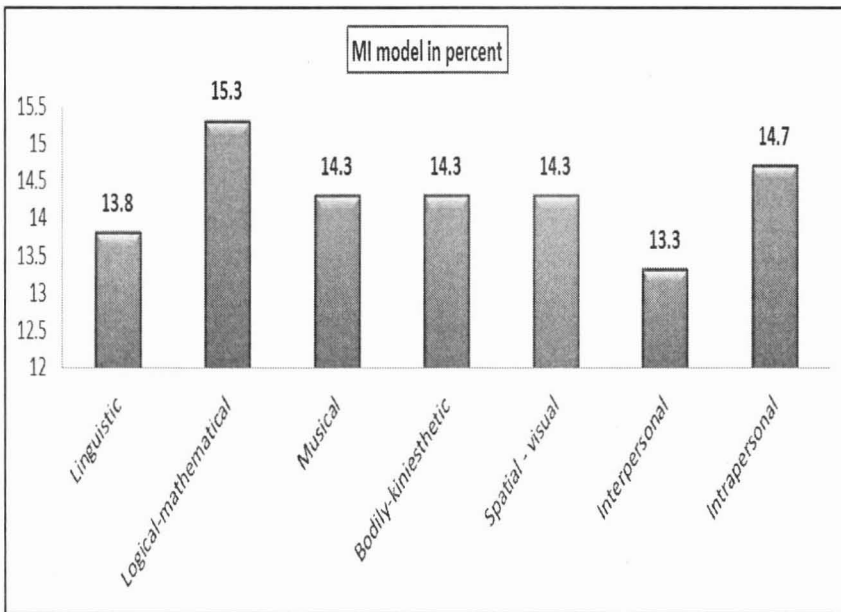**Fig. 1** the types of students multiple intelligences and their respective scores

Fig. 2 the multiple intelligences in percentage

3.1   Linguistic Intelligence

Linguistic intelligence refers to the use of written and spoken words and language in interpreting and explaining accounting ideas and information. The findings indicate that a score of 29 or 13.8% of the students have linguistic intelligence. These students prefer using words and language in learning. They can think better by seeing and using words, reading books, listening to tapes, playing games and listening to a lecture. Learning tasks and activities for this

type of learners include writing a set of financial reports, speaking on an accounting topic, writing a commentary on the existing accounting practices employed by the business managers and writing a script for a role play to mention a few. Writing a script in a role play draws much interest and fun among linguistic-typed students as they are able to creatively use words and explain the scenario in a given case study better.

In classrooms, lecturer may opt to various teaching approaches that are beneficial to linguistic intelligence students that include role play presentation, essay writing, financial analysis and report writing relative to the business operating results.   In terms of professional endeavors, linguistic intelligence students can become lecturers or financial analysts. They have an advantage over the rest of the students as they have flairs in using words and language to describe and explain situations clearly.

However, linguistic intelligence students may have difficulty in learning the early stage of both diploma and bachelor accounting programs because majority of the accounting lessons are computational applications of accounting standards. Subsequently, they perform well towards the last semester of both programs as reading lengthy case studies, interpretation, analysis, reporting and essay writings are predominant teaching and learning techniques in classrooms. This matches an observation result that these students do not perform well in the early stage of their studies as pure accounting subjects are mainly offered at these levels.

Subsequently, the students' academic standing becomes better when they take other core accounting subjects that are non-computational or descriptive.   At this point, they predominantly use language to express their ideas in essays as well as in report writings on the scenario exercises.   The need for academics to vary their teaching, learning and assessment strategies arises to complement students' weaknesses. Without such strategy, mismatch exists as obstacle to these linguistic intelligence students' academic progress as exemplified by Romanelli et al. (2009).

3.2   Logical – Mathematical Intelligence

Logical – mathematical refers to the use of reasoning and calculating as the preferred behavior in learning.   Logical – mathematical intelligence students are fond of thinking conceptually or abstractly and they choose not to think in the most practical way.   They are able to see and explore the concepts, principles and relationships of a given accounting standard and principles over the earlier ones. They need to learn and understand the concepts before they can apply them to solve the problems and they enjoy doing the tasks.

The results of this survey indicate a score of 32 as per Figure 1 or 15.3% as in Figure 2. Comparatively, the samples have a higher tendency to be logical – mathematical since they are accounting students who prefer to analyze problems using logic and perform mathematical calculations. Students who belong to this category have higher capacity to manipulate numbers and quantities as compared to other non-accounting and methodical students.

A number of matching logical-mathematical strategies can be adapted in the classroom which includes problem solving through mathematical estimates, assumptions, computations and assessments of financial statement values. In the case study analysis, for example, they have the tendency to understand the cause and effect relationship of a given emerging issue. They enjoy abstract thinking, say, by performing the why and why analysis prior to suggesting possible solutions to the issue at hand.

Comparatively, these students do well in almost all accounting subjects at the early, mid and final semesters of both the diploma and bachelor programs. But they, at times, experience difficulties in the final part of their studies due to poor English language proficiency that make them quiet and restless in class. In this situation, it is the role of the lecturer to alter the age-old teaching and learning approaches to cater for this group of students.

For example, the lecturer can ask the students to explain how the calculations are arrived at prior to the use of linguistic intelligence measures. Alternatively, the students are given the tasks to solve a problem by devising a strategy and evaluate it using the pro and con

analysis. This logical reasoning approach makes the students more engaged in solving the issues in a case study as they are able to adapt to the learning situations. This notion supports the knowledge professed by Csapo and Hayen (2006) where students differ in many ways including their intelligence that dictates ones behavior and learning styles.

3.3 Musical Intelligence

Musical intelligence means that the students have inclination to learning through sounds. They can recall and learn better when they either hear the sounds of music or listen to it. While others are disturbed by sounds during studying, this group of musical intelligence students is not perturbed by the melody of the songs. They are able to see solutions to a problem by listening to music.

The results indicate a score of 30 or 14.3% of the students belonging to this category. It is surprising that the samples have a higher or similar propensity to music or sounds as compared to other types of intelligences. Through observation, it is said that the samples are able to hear, learn, recognize and apply accounting concepts, principles and standards better through listening to music. Students love to listen to music and they cannot learn effectively without it.

The teaching and learning approaches suitable for this group include singing a song in class to illustrate how the causal factors affect a given problem, incorporating rhythmic speaking during a lecture and tape recording a lecture with background music. Surprisingly, accounting students have dreams of becoming singers or music producers. This is a scenario where students are thinking outside the box that they can opt for another profession or varied career environment as they make full use of their complementing abilities.

Unlike the conventional learning attributes of accounting students where they quietly settle for sedimentary tasks, an emerging trend shows otherwise. This is an indication that lecturers ought to understand that students have varied ways of performing their mandated academic tasks making them to vary the teaching and learning approaches in classrooms as they are essential to accommodate the students' learning development. This is unanimous to Dun and Dun (1978) and Romanelli et al. (2009). They discover that academics ought to match the preferred intelligence of the students to make education a success.

3.4 Bodily – Kinesthetic

Students' denoting a bodily – kinesthetic intelligence can be characterized by them using bodily movements or body language such as touching, acting and doing. The findings of this survey reveal that the respondents have a score of 30 or 14.3% prefer bodily – kinesthetic learning styles. They have preference to physical activity, hands-on learning, acting and role playing. In learning, this type of students use their whole body such as hands, fingers, legs and arms to think and solve problems or to execute something to make learn effective . To this end, the students will benefit much if the lecturer assimilates muscular movements in accounting learning activities.

For example, in a role play, the students learn portraying some acts that characterize a situation in a given scenario exercise question. They use all parts of their body to display the scene in the case study and most of the time with background music. This makes the student develop a mix of intelligence i.e. being a musical thinker and kinesthetic learner that supports them in understanding the accounting scenarios, transactions and events.

Alternatively, the students are required to draw a building and to estimate the construction costs. Here, the students will be interested in drawing a structure of a factory building and identifying the costs of materials, labour and other overhead costs as part of the learning process. As coined by Sims and Sims (1995) that the learning style of students can be detected through their responses to the teaching and learning environment which the lecturer ought to recognize and give meaning on those reactions for a meaningful learning process.

3.5   Spatial – visual

Spatial-visual learners, according to Silverman of the Gifted Development Center, are individuals who think in pictures rather than in words. Spatial – visual intelligence students learn better by using visuals or images that enables them use their abilities to pick up the accounting concepts all-at-once. Results of the survey indicate a score of 30 or 14.3% of the students are visual-spatial learners who learn better with the use of visual aids in class.

Observations indicate that spatial – visual students become restless when lecturer, from time to time, makes repetitions on step-by-step accounting procedures to accommodate some less attentive students. Similarly, this group of students learns easily on complicated topics but they have difficulty with easy tasks. This unique learning attributes of spatial – visual learners allows them to pinpoint faulty accounting practices from large amounts of information in a given case but when they are ask to given details of that information on hand they become uneasy. Similarly, in one of the teaching and learning activities where a product innovation project is compulsory, this group of students shows high level of creativity in the project and they tend to become dramatic and lots of surprises during the presentation.

In another observation, three of these students learn better when the author incorporated some instructional and learning activities having colorful pictorial images. Uniquely, they are able to remember those images that the author used until the end of the semester even during the revision sessions. When the author asked them to submit a role play in a video, they show great imagination and creativity of the scene which is unlikely to happen in the other groups. Coincidentally, the three of them belong in the same group. Comparatively, when these students were taking the author's Management Accounting class, a few semesters back, that involved a lot of step-by-step procedures to solve a given management problem by using figures or numbers, they were struggling hard to get even a grade of C+. These academic performance could have been better should the author has changed the teaching and learning approaches to more visual aids.

So, as a lecturer, the author always remind myself not only to be observant of the students learning intelligences, their personality differences but also the way we devise the teaching and learning plans and activities. By doing so, lecturers are able to make some improvements to accommodate the varied needs of the students in that limited time in the classroom to complete the syllabus.

3.6   Interpersonal

Gardner (1983) illustrates that interpersonal learners are those learners who are people smart where learning through sharing, comparing, and cooperating. The finding of this survey indicates a score of 28 or 13.3% of the students are interpersonal learners. Comparatively, it could be said that interpersonal intelligence level of the students is the lowest among the seven (7) types of multiple intelligences tested. This is because of the nature of the accounting educational system where almost all of the academic tasks are done by the students alone except that in the final semester they are introduced to group work.

In Integrated Case Study classes, these interpersonal learners perform well by way of group work and group project. The learning is fun as they are able to communicate, share and work together to perform a given task. Basically, the members of the group will nominate a leader and the interpersonal intelligence student is selected as a group leader. Likewise, the team players are happy and no complain whatsoever are received except from those who lack interpersonal attributes.

Additionally, interpersonal learners learn better through think-pair-share learning activity since they appreciate more the given concepts by listening to the perceptions and explanations by another student. In this instance, the students are paired to another good performing student for them to socialize, think and internalize the given issue not only in

learning and solving problems but they are also able to share and communicate effectively their ideas to different levels of crowds.

Another teaching and learning technique that the author often uses is a role play where they are required to prepare the script first prior to role playing and assessment rubrics are set to grade them fairly. By these, those interpersonal learners are able to boost their learning and academic success through cooperation mode. Conversely, the actual work scenario of an accountant is that, in spite of a few other staff in the surrounding workplace, the thing that matters most is the solitary time to complete the given tasks just in time to make reasoned judgment in a manner that is complaint to the accounting standards. Thus, in classrooms, budding accountants are trained in unison to accountant's trade, that is, they exercise interpersonal intelligence at the right time and place.

3.7 Intrapersonal

Intrapersonal intelligence can be demonstrated by a situation where a learner can learn better when the person is alone and independent. Findings of this study show a score of 31 or 14.7% of the accounting students are intrapersonal learners. Unlike interpersonal, these 31 strengths of becoming intrapersonal students exude the ability to concentrate and focus at an accounting topic and solve exercise problems better at quiet surroundings. In the state of silence, the student will be able to reflect, make alterations and discover new things about the given case study. Certainly, intrapersonal learners dislike group work as they are introverts.

This type of intelligence places the second of the 7 types of MI and accordingly it resembles the nature of their future work or task endeavors of an accounting graduate which most of them sooner or later will be members of the accounting profession. They prefer to do and complete the accounting task alone. Although, they are alone but they are capable of doing the tasks which other managers and organizations, private and public alike, value most. However, in classrooms, intrapersonal learners still need some friends and team mates to complete the assigned academic tasks. No one is an island in searching for real-life knowledge and wisdom.

In classrooms, the lecturers should understand and value the talents of these intrapersonal intelligence students by helping them exploit their full potentials. In doing so, the lecturers are instrumental to the success of these students. Although there is no significant relationship between the students' learning abilities and academic success as pointed out by Suliman (2010), it is still wise for these students to refrain from becoming intrapersonal as the future workplace environment will continuously be associated with the people and by the people. To make these intrapersonal students become a social capital, lecturers need to design the teaching and learning activities in teams to meet the varied needs of many students including the intrapersonal learners.

4. Conclusion

The seven types of Multiple Intelligences of Gardner (1983) enables all quarters in the teaching profession to understand that learners have their own idiosyncratic style of learning and intelligence which, in one way or another, a lecturer needs to match through varied approaches to teaching and learning including classroom activities. Although, time is a constraint, the lecturer should appreciate the intelligence of each and every student in the class to help them be engaged in learning and, at the same time, grow with their capabilities so that they could perform better not only in academic life but also the real-life in the industry.

By knowing the varied strengths and weaknesses of the students, the lecturer is able to take a pro-active stance in delivering the instructional and learning activities in a balanced approach that is mutually beneficial to all parties. Additionally, knowing which types of

multiple intelligences of students enables the higher educational institutions to select the educational stream or professional endeavor that suits them best. This study is limited by the number of features where the sample only involves 22 students that leave significant rooms for reporting and interpretation biases.

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