

**Student-led and teacher-led case presentations:
Further empirical evidence**

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Abstract

The use of business case studies has been frequently promoted as a method for developing accounting graduates who are active, interdependent, and independent learners. The debate continues over the best method for using the case study method; should case studies be student- or teacher-led? A recent study (Adler, Whiting and Wynn-Williams, 2004) used Kolb's Learning-Style Inventory (adapted from Honey and Mumford (1986) and Kolb (1984)) to investigate the use of business case studies and student learning styles in an intermediate-level cost and management accounting course. The findings from that study suggest that it is *how* the case studies are used and the level of student involvement that is of vital importance.

This paper extends the findings of Adler *et al* (2004) by repeating the survey but with the following potentially important changes: prior to the survey, students had completed an entire semester of intermediate-level courses, including two accounting courses, plus the surveys were administered at a later point in the particular management accounting paper.

The results of the second survey confirm and extend those of the first (Adler *et al*, 2004), namely, that a lack of active involvement in cases results in less balanced learning styles. Further, even when students have experienced the benefits of active participation, a prolonged suspension of such involvement also leads to an exaggerated lack of balance. That is, not only is the *how* of case involvement important, so is the *when*. That the students in the current survey had exposure to both more intermediate courses and to more business cases, regardless of level of involvement, had no discernible effect.

Introduction

Too often, or so it is argued, accounting is taught in a sterile, artificial manner. Pedagogical practices emphasise mechanical problem-solving, featuring well structured, well defined, and recipe-driven learning approaches that culminate in “single solution” answers (Sterling, 1980; American Accounting Association, 1986; Mayer-Sommer, 1990; Saudagaran, 1996; Albrecht and Sack, 2000). Such approaches fail to communicate the richness and complexity of organisational life. As a consequence, accounting students develop distorted views about accounting work and careers (Albrecht and Sack, 2000), and form naive and misguided understandings of the merits and limitations of accounting information for decision making (Sterling, 1980; Mayer-Sommer, 1990).

To help overcome these perceived teaching practice and learning outcome deficiencies, accounting educators have been called upon to make greater use of business case studies in classroom learning (AAA, 1986; Accounting Education Change Commission, 1990; Adler and Milne, 1997; Hassall, Lewis and Broadbent, 1998). Case studies are believed to be a superior vehicle for promoting commercial realism, helping students to connect discipline-based knowledge with practical situations, and, more generally, bridging the gap between university and professional life (AAA, 1986; Ainsworth and Plumlee, 1993; Johnstone and Biggs, 1998; Hassall *et al*, 1998; Weil, Oyelere, Yeoh and Firer, 2001; Weil, Oyelere and Rainsbury, 2004; Milne and McConnell, 2001). In addition, business case studies are seen as a valuable tool for fostering deep and elaborative learning (Biggs, 1989; Gibbs, 1992; Ramsden, 1992; Candy, Crebert and O’Leary, 1994; Boyce, Williams, Kelly and Yee, 2001).

At one time, accounting educators appeared to resist the use of business case studies (May, Windal and Sylvestre, 1995; Adler and Milne, 1997). This situation, however, appears to have attenuated, as evidenced by such changes as the growing interest in and a literature about accounting educators’ use of the case method (Rebele, Apostolou, Buckless, Hassel, Paquette, and Stout, 1998), the “proliferation of UK case study texts” (Hassall *et al*, 1998), *Accounting Education: An International Journal*’s decision to publish a special issue in 1998 on using and developing case studies, and another special issue in 2004 on the integration of case material into accounting and finance courses.

In spite of this increased interest about the use of business case studies, the literature is largely silent on who, teacher or student, should be responsible for leading/facilitating/presenting the case to achieve the best learning outcome. A study by Adler *et al* (2004) provides some preliminary clues to this issue. They examined the impact

of teacher- versus student-led case studies on students' reported preferences for Kolb's four learning cycle stages (1984). Adler *et al* hypothesised that case studies in general, and student-led case studies in particular, would make students more comfortable and confident working in each of the four learning cycle stages. Although this trend was clearly observed, the difference was not statistically significant. Of great surprise, however, was the finding that students who were *not* actively involved in the case study process became less comfortable and less confident undertaking the four learning cycle stages. In other words, the issue of who takes responsibility for presenting/leading the case study deserves much greater attention than it has been awarded in the past.

The purpose of the present paper is to further test and extend the findings of the Adler *et al* (2004) study. The paper begins by discussing the relevant literature on who, student or teacher, should lead/present business case studies. The paper then describes a study that examines student outcomes associated with the use of student- versus teacher-led case studies. The third section presents and discusses the study's results, while the final section provides the paper's conclusion.

Literature Review

The issue of who should be responsible for leading/presenting case studies is seldom referred to in the business case study literature. The typical advice is invariably prescriptive and assumes sound-bite stature. A typical illustration of this is Mauffette-Leenders, Erskine and Leenders (1997, p. 103-105) who, in their book *Learning with Cases*, allocate one page to identifying the different presenter possibilities. Their sentence following the listing of the various presenter possibilities is quite telling. Their statement, "Whatever the type of presentation [format]," communicates the idea that an exploration of the pedagogical benefits and learning outcomes of using different presentation approaches is trivial and unimportant.

Adler *et al*'s (2004) study, however, demonstrates that the issue of who leads or presents the case study is a far from trivial issue. Their study reveals that teacher-led business case studies produce students who are less comfortable and confident working across Kolb's (1984) four learning cycle stages. According to Kolb, (1984, p. 32), learning is a cyclical process of discovery and testing. Underpinning this cycle of learning are the four stages of concrete experience, reflective observation, abstract conceptualisation, and active

experimentation.¹ In particular, students who fail to lead a case presentation and/or fail to write a case report become more reflective and passive in their learning approach and less curious, less inductive, and less decisive.

Figure 1 about here

Kolb believes the most effective learners are those individuals who can feel comfortable undertaking any stage of the learning cycle. Kolb, Osland and Rubin (1995, pp. 50, 51-2) communicate this need when they write:

We may jump into experience but fail to observe the lessons to be derived from these experiences; we may form concepts but fail to test their validity. In some areas our objectives and needs may be clear guides to learning; in others, we wander aimlessly.... The key to effective learning is being competent in each mode when it is appropriate.

Educators should therefore strive to help their students grow the skills, attitudes, and abilities that allow them to confidently undertake all parts of the learning cycle. By doing this, students will become “balanced” learners. Such balance allows learners to adopt the learning style most appropriate to a given situation’s demands and should lead to more effective learning (Wilson and Hill, 1994).

When seeking to develop their students into more balanced learners, educators from different academic disciplines will find that they are confronted with different challenges. At one time, it was believed that business students in general, and accounting students in particular, displayed a converger learning style (Clarke, Oshiro, Wong and Yeung, 1977; Baldwin and Reckers, 1984; Baker, Simon, and Bazeli, 1986). More recently, this conception has been challenged (Holley and Jenkins, 1993; Loo, 2002; Marriott, 2002; Chung and Hu, 2003; Adler *et al.*, 2004). These latter studies suggest that accounting students evidence a wider variety of learning styles, with the assimilator and accommodator styles being often equally as pervasive as the converger style.

The converger and assimilator should benefit from the classroom use of business case studies. By promoting commercial realism and helping students to connect discipline-based knowledge with practical situations, case studies should attenuate the convergers’ and assimilators’ predilection for abstract conceptualisation and aversion for concrete experience (AAA, 1986; Ainsworth and Plumlee, 1993; Johnstone and Biggs, 1998; Hassall *et al.*, 1998). The study of Adler *et al.* (2004), however, suggests that the relationship between the use of

¹ The learning cycle is discussed further below, in the section covering the research instrument.

business case studies and student learning preferences is not so straightforward. Instead it appears that there may only be very marginal benefits from using business case studies to develop students into more balanced learners. Furthermore, this effect only occurs when students take charge and become actively involved in the case presentation. For those students who do not assume an active role in the case presentation, learner balance decreases.

Though it may seem counterintuitive at first, the finding that inactive students become less balanced learners under the case method is intimated in the literature. Barrows (1986), for instance, notes that the composition of the case study and how it is used greatly influences the learning outcomes achieved. More specifically, Barrows finds that cases studies can be categorised into one of six groups: lecture-based cases, case-based lectures, case method, modified case-based, problem-based, and reiterative problem-based. Barrows argues that there is a progression to the benefits that can be achieved through the use of business case studies, with the maximum benefit coming from the use of the reiterative problem-based approach. The reiterative problem-based approach, not coincidentally, demands the fullest amount of student involvement.

Stinson and Milter (1996) have similar views to those of Barrows. Stinson and Milter find that, unlike the lower-level case study methods described by Barrows, students need to be more active in the case study to achieve the desired learning outcomes. In particular, students must frame the problems themselves, and must decide what information to gather and what management tools to use. Accordingly, Stinson and Milter believe that little value can be gained in the Harvard style approach, where cases are too structured, too disciplinary-based, and too controlled and presented by the instructor.

This discussion of the use of case studies leads to the following testable hypotheses:

H₁: Accounting students do not predominantly exhibit a converger learning style.

H₂: Failure to actively involve students in advanced case studies will result in these students showing less balance in their approaches to learning.

These hypotheses serve to focus the remainder of the paper, first by describing a study designed to test the hypotheses, and then by communicating the findings of this study and their implications for accounting educators.

Research Method

Research Instrument

Kolb's Experiential Learning Model (ELM) is based on the work of Piaget (Flavell, 1963), Lewin (1951) and Dewey (1938). As discussed earlier, Kolb proposes that learners cycle through four learning stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. The second (12-item) version of the Learning-Style Inventory (LSI), adapted from Honey and Mumford (1986) and Kolb (1984), was used to investigate Kolb's ELM. Although Adler *et al* (2004) recognise the deficiencies of this instrument, it was used again in this study in order to facilitate comparison with the earlier study.

In the LSI, students are asked to rank words or phrases according to how well the word or phrase describes his/her learning style. High rank orders given to "feeling" correspond with a preference for concrete experience (CE)², while high rank orders for "watching," "thinking," and "doing" correspond with "reflective observation" (RO)³, "abstract conceptualization" (AC)⁴ and "active experimentation" (AE)⁵ respectively. The four learning modes combine into two learning styles (see Fig. 1) that indicate preferences for acquiring the information and for transforming the information into knowledge. See Adler *et al* (2004) for a more complete description of the LSI.

Targeted Sample

Participants in the study are students in the same compulsory, one-semester, intermediate-level university course as surveyed in 2002 (Adler *et al*, 2004). In 2003, it was run in the second half of the year (semester 2), after students had, in general, completed first year management and financial accounting courses and one or two intermediate level accounting courses. In comparison, the 2002 cohort undertook this course in semester 1 after completion of first year accounting papers the previous year (Adler *et al*, 2004). There were 181 students in the 2003 course, divided into six classes of approximately thirty students each. Three lecturers were responsible for facilitating the classes, and, as in 2002, each class had the same lecturer for the whole semester.

² CE: Ability to become fully, openly involved and without bias in new experiences.

³ RO: Ability to reflect on and observe these new experiences from a variety of perspectives.

⁴ AC: Ability to create concepts that integrate these observations into logically sound theories.

⁵ AE: Ability to use these theories to make decisions and solve problems.

The intermediate cost and management accounting course is described in detail in Adler *et al* (2004). Specifically, the course takes a problem-based learning approach, which is different to the lecture-tutorial format utilised in first year and the other preceding second year accounting courses. In 2003, ten “advanced” (Kimmel, 1995) richly descriptive business cases drawn from Shank (2001) were studied over the period of 13 weeks. Lecturers take a Harvard style case method approach (Barrows, 1986) for the initial three cases to develop students’ understanding of costing techniques and their integrated role in organisations. This is followed by seven student-led case preparations whereby a more “problem-based” approach to the cases (Barrows, 1986) is followed.

Three one-hour class sessions each week (Monday, Wednesday and Friday) are devoted to progressively analysing one of these business case studies. The approach is again fully described in Adler *et al* (2004), but in brief, it moves from initial identification of the issues and problems to exploration of new concepts and techniques and finally to a suggested solution. The group responsible for the case study typically plays a lead role on the Monday and a shared role with the facilitator on the Wednesday. On the Friday, the group formally presents its own case solution to the class. An acceptable solution can be one of a range of suitable solutions. The presenting group also submits a written business report on the case.

There were some small variations in assessment from 2002, but the majority of the course assessment is still by case study. This ranges from 63.5-75% depending on students’ choice of options and the effect of plussage. Students sit some small quizzes throughout the course (10% of course grade), and they can undertake an optional mid-semester test (10%). They may also choose to submit an individual written study on a case. The majority of the final exam is a case study.

Data Collection

Subsequent to obtaining university ethical approval, the students were asked to complete the research instrument twice during the semester. Because Adler *et al*'s (2004) non significant results may have resulted from a short treatment period, the 2003 survey extended the treatment period by exposure to more cases, and focussed on the latter half of the course. The first questionnaire was completed in the tenth week of the course when all students had been exposed to the Harvard style (teacher-led) case method used for the introductory cases, and four of the seven groups in each class had presented their case studies. At this time, a small number of students had also completed optional individual case studies. The second

questionnaire was completed in the last week of the course. At this point, all students had completed a group case study for which they had assumed responsibility for the learning outcomes, and some additional students had undertaken individual case assignments.

For the purposes of anonymity, the questionnaire was administered by an independent person, and the participants were asked to invent unique identifying codenames, known only to themselves. In the 2002 study, many students could not recall their identifying codenames at the time of the second questionnaire. This resulted in a substantially reduced sample for analysis, as the codenames were required to match individuals across time. To combat this problem in 2003, a list of identifying codenames was recorded (but not matched to actual names) for each class during the first questionnaire, and shown to the students with the second questionnaire.

Descriptive Results

The 2003 sample presented a very similar profile to that of 2002. There were equal numbers of males and females, and 88% of the respondents were full-time students. As well, nearly half of the sample had some form of paid employment. Seventy-four percent of the sample considered their ethnic backgrounds to be New Zealand, Maori or European, and 15% were of Chinese origin.

The 2003 class was larger than in 2002, but still many students either did not complete the questionnaires or else did so incorrectly. There was a 70% response rate for the first questionnaire (“test 1”), with 68% of the class correctly completing the second one (“test 2”). The descriptive results suggested no observable differences between the two groups (respondents to test 1 and to test 2) with respect to age, gender, ethnic origin, paid employment and university workload. Ninety-seven students were able to be identified as having correctly completed both tests, thus forming a matched pair sample of 54% of total respondents.

One of the recognised limitations of Adler *et al* (2004) was the loss of respondents due to poor matching between tests 1 and 2. In the current study, the matching process was more successful, but significant numbers of responses were lost due to incorrect completion of the questionnaire, indicating a need for clearer instructions in future studies.⁶

⁶ Non-teaching staff members administered the questionnaires for both surveys, and none of those involved in the first survey were available for the second. The instructions given may have been less complete the second time.

In order to test whether the paired sample was representative of all students, a series of chi square tests (gender and ethnic origin) and t-tests (age, workload of papers and job hours) were undertaken. There were no significant differences between this group and the whole class sample. Similarly, results on the four learning modes (CE, RO, AC and AE) for the 97 pairs were not significantly different to those for the whole sample. Thus the conclusion can be reached that the sample of 97 matched pairs is representative of the whole class sample.

Tests for normality indicate that the results for CE at both test 1 and test 2 were not normally distributed, with skewness and kurtosis results outside the range of ± 0.05 and ± 1 respectively. The other learning modes showed normal distributions. Thus non-parametric tests were conducted alongside any parametric tests, for assurance of results. Kruskal-Wallis tests supplemented ANOVAs when testing for significance between active and non-active respondents, and Wilcoxon signed rank tests (also called Wilcoxon t-tests) were run alongside paired t-tests when looking for significant results between tests 1 and 2 (see results below).

Learning styles

In order to test hypothesis 1, individual students' learning style scores were placed into one of the four learning style quadrants as discussed in Figure 1. As discussed in the Literature Review, there are claims that the preferred style for accounting students and practitioners is that of converger, with some evidence to say this is no longer universally applicable. Adler *et al* (2004) found their sample of 78 matched pairs at test 1 showed 77% equally divided between converger and assimilator, with remaining students equally divided between accommodator and diverger. Their study also found that Chinese students preferred the assimilator style, with significant presences also in diverger and converger. Males were more evident in the converger quadrant, and females showed tendencies towards accommodator and assimilator.

In the current study, most students again favoured converger and assimilator styles of learning in roughly equal proportions. However, instead of the remaining students being equally divided between the two remaining preferences, there were more favouring the diverger style rather than accommodator. New Zealand / European students as well as Chinese students reflected these same tendencies. When the sample is considered according to gender, the same pattern is again seen for males. Females also favour converger and

assimilator styles, but the remaining women show a slightly stronger presence in the accommodator, rather than the diverger, region.

A chi square test supports the observation that accounting students are not predominantly convergers. Hypothesis 1 is therefore supported, and the results suggest that both assimilator and converger learning styles are common amongst New Zealand accounting students.

Learning Modes

To investigate students' learning preferences, mean scores for the four different learning modes (CE, RO, AC, AE) were calculated and compared. Tables I and II compare results from tests 1 to 2 for the whole sample of 97 matched pairs. The "normal" range is, as in Adler *et al* (2004), taken from the Kolb data (EBLS, 2002) that reflects results from over 1400 men and women aged between 18-60 years. The "norm" is taken to be the range of scores between the 40th and 60th percentiles.

At test 1, the mean for CE is below the range for "norm," and for AC is above. RO and AE both rest within the range for norm. The effect of CE and AC combine to push the mean for the learning style AC-CE well above the norm. The mean for RO is almost at the upper boundary for the norm. AE and the learning style AE-RO are within the norm. The combined effect of the CE and AC modes result in the "kite" having a tail tending towards the "theorist" style of thinking (see Figure 2 for a diagrammatic representation). This axis indicates students' preference for acquiring information in a conceptual and logical fashion. The preferences for transforming information into knowledge (as indicated by the AE-RO axis) appears to be fairly well balanced.

Table I

Results of LSI – 1st Test (n=97)

	Norm (40 th -60 th percentile)	Mean Test 1	Range Test 1	Std. Dev. Test 1
CE	24 – 26	21.15	12 – 46	6.65
RO	28 – 31	30.65	19 – 46	6.35
AC	28 – 31	34.60	16 – 47	6.81
AE	32 – 37	33.57	16 – 48	7.42
AE-RO	2 – 8.5	2.92	-22 – 28	11.85
AC-CE	2.5 – 9	13.44	-22 – 33	11.45

The same results are seen after test 2 with regards to CE and AC, and hence for AC-CE. However, despite still being outside the norm, these means are marginally closer to the norm. The mean for RO has moved to slightly above the upper boundary for the norm, and AE has moved slightly more towards the lower boundary (though remaining within). This has caused the mean for AE-RO to move from near the lower range for the norm to a position just below that mark. Results from tests 1 and 2 were compared using Wilcoxon tests and paired t-tests. There were no statistically significant differences in the means, indicating that any changes in means from test 1 to test 2 are not statistically significant.

Table II

Results of LSI – 2nd Test (n=97)

	Norm (40 th -60 th percentile)	Mean Test 1	Mean Test 2	Range Test 2	Std. Dev. Test 2
CE	24 – 26	21.15	21.49	12 – 48	9.41
RO	28 – 31	30.65	31.32	14 – 46	6.51
AC	28 – 31	34.60	34.26	13 – 48	8.02
AE	32 – 37	33.57	32.98	13 – 48	8.08
AE-RO	2 – 8.5	2.92	1.66	-28 – 28	12.76
AC-CE	2.5 – 9	13.44	12.76	-35 – 35	15.90

The current survey was administered at a later time in the year than the 2002 survey (Adler *et al*, 2004), allowing students to complete an extra semester’s worth of courses (including two compulsory accounting courses). The researchers were concerned that a maturation effect could mean that the two surveys were not comparable. To investigate this, the results from test 2 in the previous survey were compared to results from test 1 in the current survey. At these points in the two surveys, the samples were a similar mixture of students with and without active involvement in case preparation. The “active” students for both tests were compared, with no significant differences detected. It thus appears that the issue of *when* active case involvement occurs in an accounting degree does not have a major impact on learning styles, at least as far as intermediate-level students are concerned.

To test hypothesis 2, students were classified as non-active and active by test 1. “Active” students were those that had been involved in a group case presentation and/or prepared an individual case report. The rest of the students were non-active at test 1, but had become active by test 2. All students in the course are required to participate in a group case presentation and some also choose to prepare a written individual case report. Because of

incomplete identification of individual case studies, the data set was reduced by five, to 92 matched pairs.

In order to test for any changes to learning modes and learning styles over time, Kruskal-Wallis tests and ANOVAs were used to compare results for the 29 students identified as being non-active at test 1 to their results at test 2. Table III indicates that despite a lack of statistical significance, the means for the three learning modes CE, RO and AC all moved closer towards the norm, while AE remained within the boundaries of the norm. The learning style AC-CE also moved in the expected direction towards the normal range. These results are included in Figure 2, as compared to test 1 results for the initial sample of 97 students. So despite statistical significance, the trends are in the anticipated direction towards a more balanced learning style.

Table III

Changes in Means for 29 Respondents (non-active at Test 1)

	Norm (40 th -60 th percentile)	Test 1	Test 2
CE	24 – 26	20.97	23.97
RO	28 – 31	29.59	29.66
AC	28 – 31	34.72	33.00
AE	32 – 37	34.90	33.38
AE-RO	2 – 8.5	5.31	3.72
AC-CE	2.5 – 9	13.76	9.03

There were 63 students identified at test 1 as having already actively participated in case preparation at the time of test 1. Their “starting” positions at the beginning of the semester cannot be determined, but the expectation is that, having discovered the benefits of deeper personal involvement in case preparation, they should retain any movements towards the norm, or at least not move further away to an even less balanced position. The results for the 63 active respondents at test 1 and at test 2 are compared in Table IV.

The results for RO and AE remained within the norm, while CE and AC (and hence AC-CE) moved slightly further away from the norm. Though not statistically significant, this does provide some tentative support for H₂. It indicates that this group of students is beginning to lose ground, despite having already experienced the benefits of active participation in case preparation. There were no statistically significant differences between the means of the

active students compared to non-active students at the time of test 1 to explain this surprising result.

Table IV
Changes in Means for 63 Respondents (active at Test 1)

	Norm (40 th -60 th percentile)	Test 1	Test 2
CE	24 – 26	20.94	20.35
RO	28 – 31	30.75	31.78
AC	28 – 31	34.60	34.81
AE	32 – 37	33.59	33.10
AE-RO	2 – 8.5	2.84	1.32
AC-CE	2.5 – 9	13.67	14.46

Further, all students had become active by test 2. A comparison was made between the test 2 results for the 29 recently-active students and the 63 previously-active students. Though not statistically different, the 29 students who had become “active” since test 1 displayed results for CE and RO that were closer to the norm than those students who had become active at an earlier time. These results are displayed in Table V.

Table V
Results of LSI – 2nd Test (n=92)

	Norm (40 th -60 th percentile)	Test 2 Means Active at test 1 n = 63	Test 2 Means Non-active at test 1 n = 29
CE	24 – 26	20.35	23.97
RO	28 – 31	31.78	29.66
AC	28 – 31	34.81	33.00
AE	32 – 37	33.10	33.38
AE-RO	2 – 8.5	1.32	3.72
AC-CE	2.5 – 9	14.46	9.03

To continue the investigation, the 63 students considered active at test 1 were further divided into two groups. Forty-six had no further active involvement with case work after test 1, while 17 did engage in more case work. (They either completed an individual written report or were involved in a group case presentation, having prepared an individual written case report prior to test 1). Results for the two sub-groups across the four learning modes were virtually the same at test 1, with nothing significant at that point to indicate any difference

between these two sub-groups. Table VI presents the results for these two sub-groups at test 2. The learning mode AC and learning style AC-CE showed statistically significant differences.

Table VI

Results of LSI – 2nd Test for students considered active at Test 1 (n=63)

	Norm (40 th -60 th percentile)	Test 2 Means Active between tests 1 & 2 n = 17	Test 2 Means Inactive between tests 1 & 2 n = 46
CE	24 – 26	23.06	19.53
RO	28 – 31	31.88	31.74
AC	28 – 31	31.76	35.93 ¹
AE	32 – 37	33.47	32.96
AE-RO	2 – 8.5	1.59	1.22
AC-CE	2.5 – 9	8.71	16.59 ²

¹p=0.055

²p=0.062

When changes between tests 1 and 2 are reviewed, the evidence becomes clear. For the 46 who had no further active involvement after test 1, the learning modes CE and AC, and hence the learning style AC-CE, showed significant movements away from the norm. Again, paired t-tests were used, supported by Wilcoxon signed ranks test for the learning mode CE, which had a non-normal distribution. CE moved to a lower percentile position while AC moved to a higher percentile, combining to shift AC-CE to a position even further above the norm than it was at test 1. The AC-CE learning style relates to students' preference for acquiring information, indicating an increased preference for thinking and building theories based on observation, with a lack of feeling and intuitive understanding.

The results for the 17 students who did partake in further case preparation were closer at test 2 to the norm than at test 1, though not statistically significant.⁷ There was clear movement in the desired direction. Table VII presents the results, and Figures 3 and 4 map this information into kite-shaped diagrams.

⁷ The significance levels for AC and AC-CE are close to a 10% probability level at 0.14 and 0.18 respectively. The small sample size of only 17 individuals may contribute to the lack of significance.

Table VII

Changes in Means for students considered active at Test 1

	Norm (40 th -60 th percentile)	Test 1 Means Active between tests 1 & 2 n = 17	Test 2 Means Active between tests 1 & 2 n = 17	Test 1 Means Inactive between tests 1 & 2 n = 46	Test 2 Means Inactive between tests 1 & 2 n = 46
CE	24 – 26	20.18	23.06	21.22	19.53 ¹
RO	28 – 31	31.00	31.88	30.65	31.74
AC	28 – 31	34.76	31.76	34.54	35.93 ²
AE	32 – 37	33.59	33.47	33.59	32.96
AE-RO	2 – 8.5	2.59	1.59	2.93	1.22
AC-CE	2.5 – 9	14.59	8.71	13.33	16.59 ³

¹p=0.050 (Wilcoxon 0.025)²p=0.052³p= 0.019**Conclusion**

As expected, the majority of students (whether considered as the entire sample or whether categorised according to gender or ethnic origin) are not predominantly convergers, but show a preference for either the converger and assimilator learning styles in roughly equal proportions. There is very little change in these proportions between tests 1 and 2. So while the converger style is significant, it did not predominate.

Adler *et al*'s (2004) results suggest that active involvement in case studies is associated with a more balanced learning style, but they could not provide statistically significant support for that trend. This study also indicated a trend to more balanced learning styles, but these movements were, again, not large enough to support the assertion. Of more interest, however, is the further support that this study offers to Adler *et al*'s (2004) finding that students who are not actively involved in the case study process become less balanced in their learning style approach.

When the 2003 accounting students who were categorised as active at test 1 were grouped according to subsequent activity, it was found that those with no further active case involvement became significantly less balanced learners, *despite prior involvement*. Those with further involvement showed discernible movement towards balanced learning styles, though not statistically significant. Lack of *continued* active involvement appears to mean movement towards being less balanced learners.

Adler *et al* (2004) concluded that a lack of involvement leads to less balanced learners; the current study indicates that active involvement needs to be maintained. There does not appear to be any significant difference between the two sample groups that might affect the results. Future research would benefit from a more prolonged period of measurement or from following a cohort of students at regular intervals throughout their accounting programme. However, this study continues to emphasise that it is vitally important *how* business cases are used. Just as importantly, active involvement needs to be maintained; having once become deeply engaged in the process of “solving” a set of business case problems does not guarantee the continuation of a more balanced attitude towards learning.

Figure 1 - Summary of Kolb's Experiential Learning Cycle and Basic Learning Styles

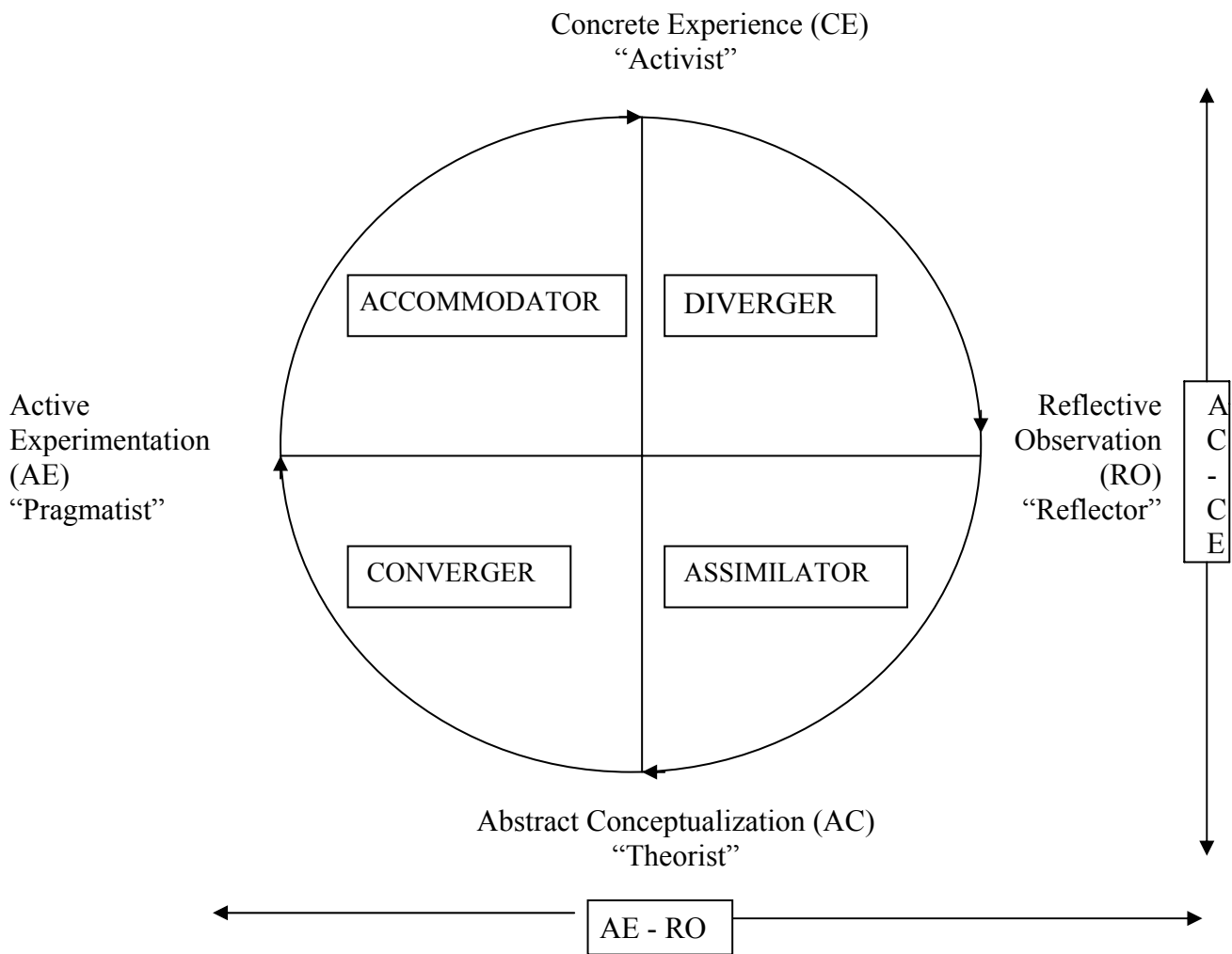


Figure 1 continued....

Learning Mode		learns BEST from:	learns LEAST WELL from:
CE – Activist “feeling”	becomes involved fully, openly and without bias in new experiences – feels, doesn’t think	experiences, problems, challenges, opportunities, groups, being “on the go”	passive roles, reading, watching, repetition, precise instructions
RO – Reflector “watching”	reflects on and observes experiences from many perspectives – understands ideas, not practical application	thinking, standing back and watching, reviewing events, careful analysis	being in roles of leadership, situations with no time to plan, feeling rushed
AC – Theorist “thinking”	creates concepts that integrate observations into logically sound theories – thinks, doesn’t feel	concepts, theories, time to be methodical, logic and generalisation	action without understanding purpose, emotions, unstructured and ambiguous situations
AE – Pragmatist “doing”	uses theories to make decisions and solve problems – practical applications, not reflective understanding	techniques with practical advantages, examples, high face validity, clear practical plans	situations with no obvious practical benefit, ivory tower theory, lack of clear guidelines, not getting on with things

Learning Styles:

AC-CE = indicates preference for acquiring information

AE-RO = indicates preference for transforming information into knowledge

Learning Preferences:

Diverger: imaginative and awareness of meaning and value – adaptation by observation, not action – good at brainstorming

Assimilator: inductive reasoning and ability to create theoretical models – focus on ideas, abstract concepts, logically sound theory – if facts don’t fit theory then re-examine the facts

Converger: focus on finding practical uses for ideas and theories – often dominate specialist and technology careers – antithetical to development of generic learning skills – focus on specific problems – prefer technical tasks over societal and interpersonal skills

Accommodator: ability to adapt to changing circumstances – if facts don’t fit theory or plan then discard plan – problems solved in intuitive trial and error way – good at executing plans like converger but will also take risks

Figure 2 – sample of 97 Test 1 plus “inactive” at Tests 1 & 2

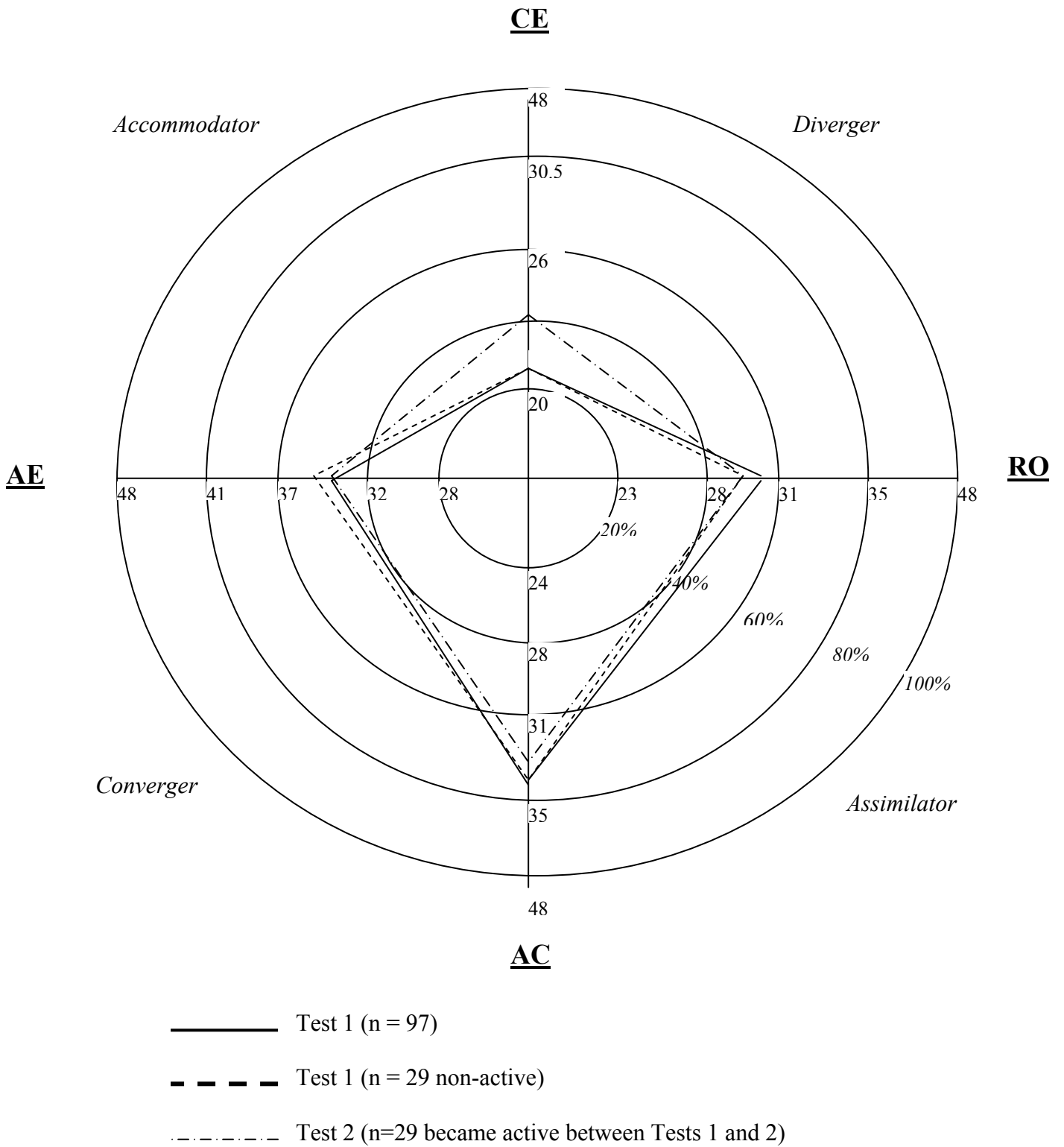


Figure 3 – 46 students categorised as active at Test 1 but no further activity

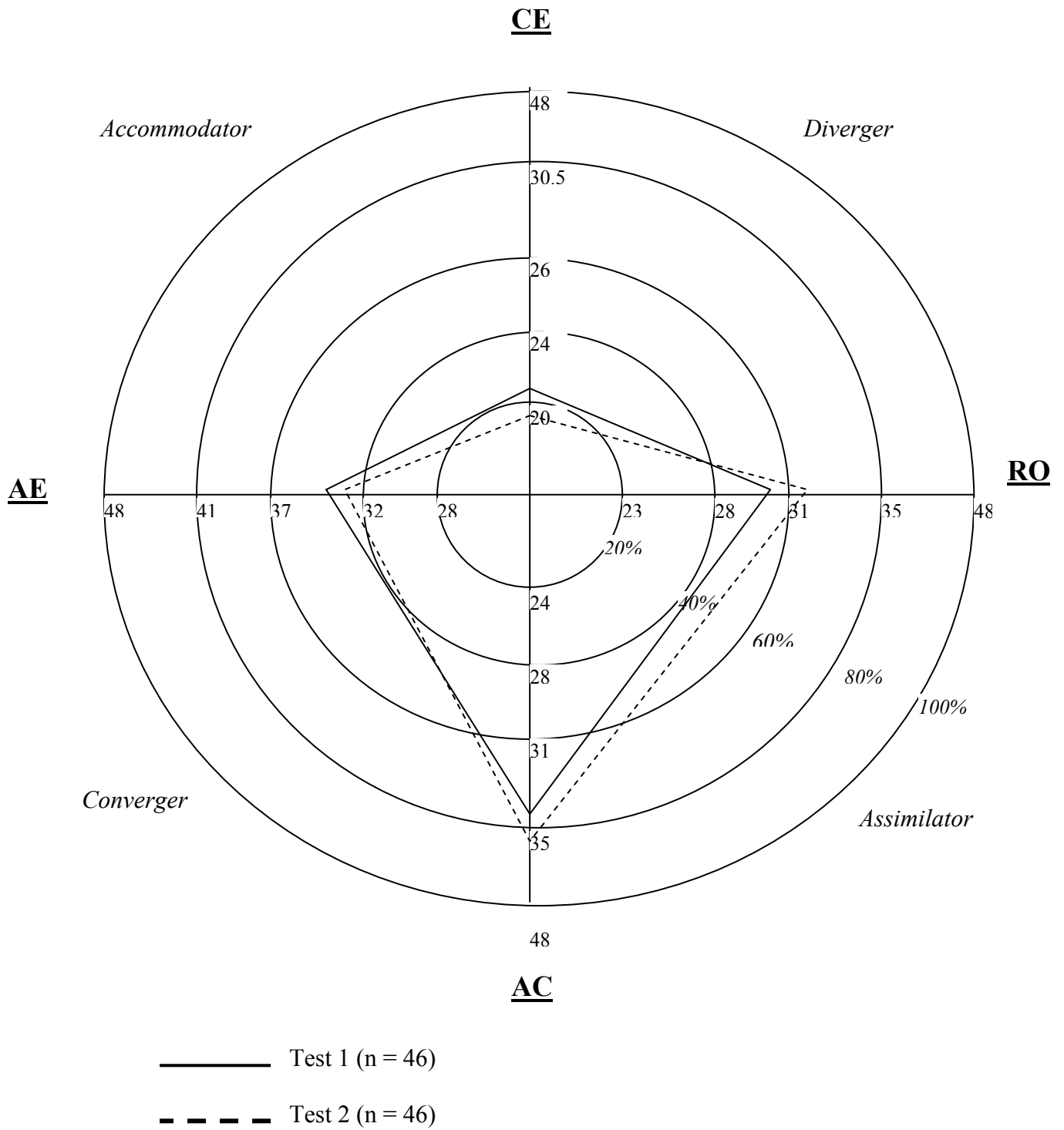
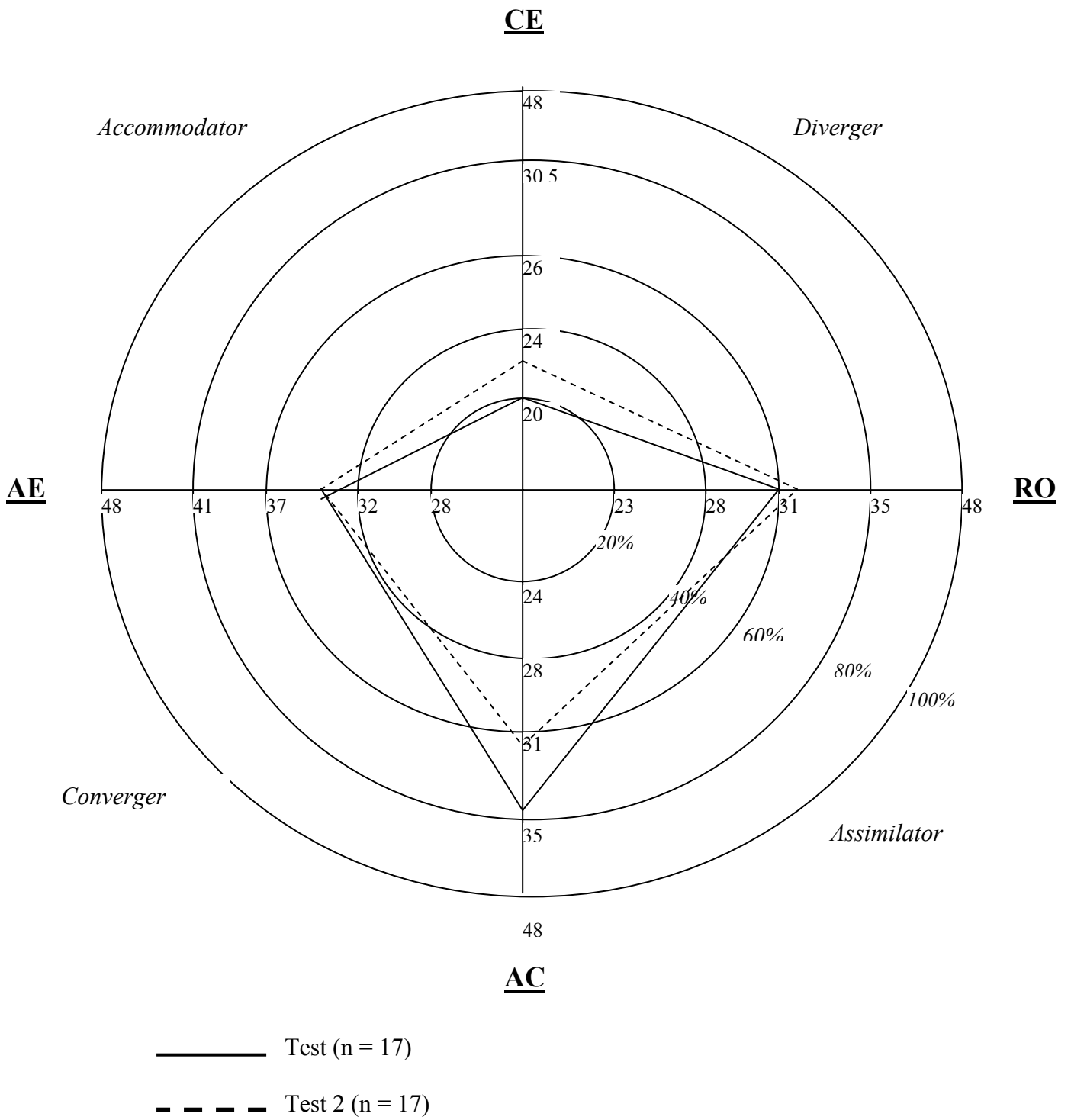


Figure 4 – 17 students categorised as active at Test 1 but did engage in further activity



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