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ABSTRACT

The two conference presentations contained in this document are entitled, respectively, "Experience versus Theory in Teacher Education: Student-Teachers as Researchers" by a tutor, J. Heywood, and two student teachers, A. FitzGibbon and L. A. Cameron, and "Researching Instruction while Student-Teaching" by student teacher Paula Carroll. The first paper describes student attitudes toward a course in psychology in teacher education as they were systematically obtained during academic years 1989-90 and 1990-91. The course was called Applied Psychology of Instruction, and its purpose was to consider the range of instructional potential and to invite student teachers to experiment with as many strategies as possible during their teaching practice. Specifically, the study assessed student attitudes toward use of different theories of instruction, including: concept learning, imagery, decision making, matching learning styles to teaching, and discovery or guided discovery. The paper concludes that the course helped student teachers experience and understand the value of different approaches to teaching, and recommends that it be made into a 2-year course due to its extensive content. The data discussed are displayed in 12 tables. The second paper cites evidence that testing and then retesting 12-year-olds with the Kolb Learning Styles inventory resulted in one-third of the students changing learning styles. The paper also found that teaching a lesson that goes through the four phases of the Kolb cycle improves learning, but it could not be proven that students learn best in the phase that corresponds to their own style. (Contains 22 references.) (JDD)

EXPERIENCE VERSUS THEORY IN TEACHER EDUCATION

I
Experience versus Theory in Teacher Education Student-Teachers as Researchers

by

J. Heywood A. FitzGibbon L.A. Cameron

II
Researching Instruction while Student-Teaching

by

Paula Carroll

Presented at the Annual Conference of the Association for Teacher Education in Europe, September 1991, Noordwijkerhout, the Netherlands.

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Introduction.

Arguments about the relative merits of experience and theory in the education of student-teachers are never far away. Last year, just before the annual conference of the Association of Teacher Education in Europe they surfaced in the form of a report published by a conservative party think tank by a Dr. Sheila Lawlor (Lawlor, 1990). A reply was given to this report at the conference (Heywood, 1991 (a)).

In essence Lawlor proposed that traditional courses of teacher education should be abandoned in favour of supervised teaching in the classroom, which is to adopt the British model of apprenticeship or, "learning by Nellie" as it is facetiously known. Associated with her recommendation was a corollary that students should not be subjected to courses in psychology and their like.

Replying to Lawlor it was argued on the basis of work by Abercrombie (1960) in Britain and Hesseling (1966) in Holland that over-reliance on experience inhibits an individuals potential to learn and respond to new situations and an individuals capacity to adapt becomes impaired (Heywood, 1989 (a)). Over-reliance on experience was one of the reasons for the decline of British manufacturing industry since it reduced the potential of organizations to adapt (Youngman et al 1978). Therefore, a master apprenticeship would severely restrict the frames of reference available to student-teachers and restrict their ability to evaluate the range of instructional activities available for experiment in the classroom.

A major purpose of a course in psychology in teacher education is to consider the range of instructional potential and, to invite student-teachers to experiment with as many strategies as possible during their teaching practice. In the reply to Lawlor a course in the Applied Psychology of Instruction for graduate student-teachers was described which had these goals as its intention.

The objective of this paper is to describe student attitudes to this course as they have been systematically obtained during the last two academic years (1989-1990 : 1990-1991).

The course in the Applied Psychology of Instruction.

The evolution of this course has been described in detail elsewhere (Heywood 1991 (b)). Although it has as its goal the testing by students of theory in practice there are other elements of this one year programme which prepares graduates to teach in second-level education which are concerned with classroom practice. On the one hand are subject-specific methodology courses and on the other supervised teaching practice.

	ASSESSMENT CHECK LIST	YOUR OWN ASSESSMENT	TUTOR'S ASSESSMENT
1. Entering characteristics of pupils.	Statement of class: details including entering characteristics (a)brief statement (gender, number, age, ability range) (1)(b) showing where they are at in the subject (3)(c)(a) and (b) plus detailed description of the pupils (5) If you have given these deatils in a previous lesson plan, enter this information at the top of the lesson plan. Note if there have been any changes in respect of particular individuals.		
2. Evaluation of theory and statement of hypothesis.	Adequate statement of theoretical background (a) as would be copied in a book (3)(b) showing additional insight eg. relation-hips with other theories (5)(c) showing linkage with lesson (n.b. to avoid duplication this section plan see section 5 below)(7).		
3. Aims and Objectives.	Statement of Behavioural Objectives (a) imprecise (o), precise but wanting more or less than the lesson could or can give (2)(c) process objectives provided they can be observed in respect of individuals in the class (2), (d) terminal objectives stating what the student will be able to do at the end of the class in terms of knowledge and learning skills (5).		
4. Test.	A test designed to assess that the objectives have been achieved(6), and that the learning theory under evaluation has been tested(6).		
5. Lesson plan.	Schema of lesson plan, showing phases, strategies and summary of content (10). Clearly showing how the instructional strategies relate to the problem established in the theoretical background (15).See section 2 above. Also see Exhibit 8.9 for outline of schema. Double sided A4 may be used.		
6. Evaluations	Evaluation showing first evaluation (a) what happened in the class (6) (b) personal responses to class (6). Second evaluation (c) test at a time distant from the class (see note 4) (d) simple statistics of the test/s-(i) mean scores (3) (ii) standard deviations (3). (e) interpretation (3) and conclusions from the test/s (5) (f) reservations and assumptions (5). (g) supporting illustrations from students work in class or the test (4). N.B. If a test is not used, a full justification of the method of evaluation used must be given.		
7. Overall Evaluation.	Evaluation of the theory (3) in the light of this study and your other experience during this year.		
8. Presentation.	Presentation (a) format according to regulations (i.e. A4 paper on one side, margins tec. (3) (b) general literacy (e.g. grammar, explanations to the point (7).		
	THIS ASSESSMENT SHOULD NOT BE TAKEN TO MEAN THAT THE 'CONTENT' IS NECESSARY CORRECT IMPRESSION MARK (TOTAL 10).....		

Exhibit 1. Lesson Plan Assessment Schedule

EXHIBIT 2

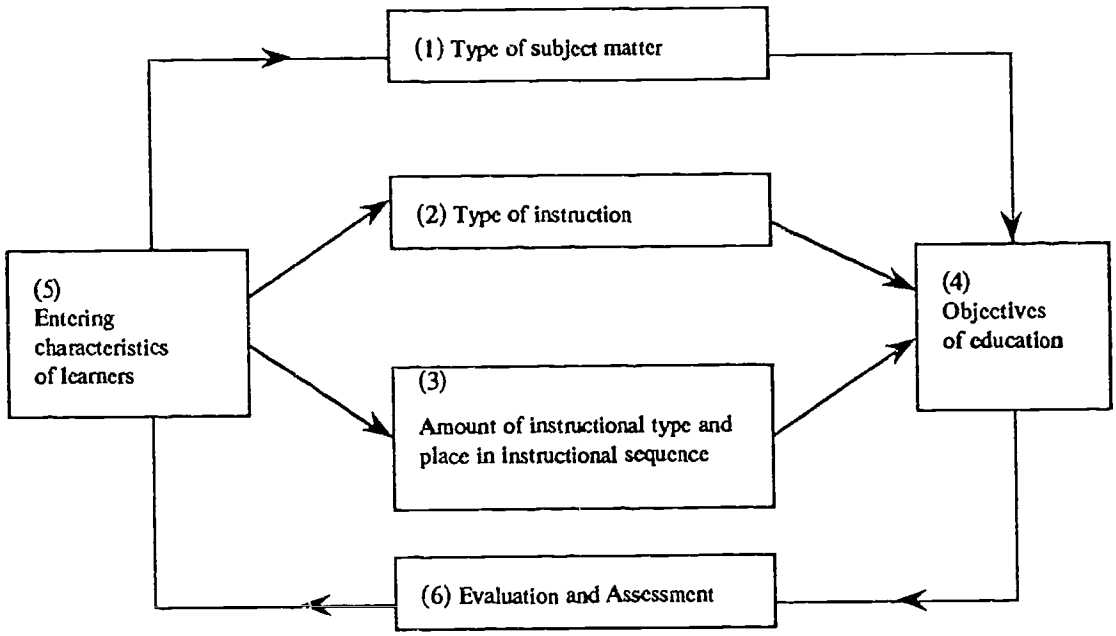

Exhibit 2.
Theoretical generalization about the nature of instruction (Shulman's (1970) generalization of Cronbach's view of the nature of instruction). Item (6) has been added by this writer. Examples of the variables given by Shulman: (1) content of subject defined in task terms; (2) expository-discovery (degree of guidance), inductive-deductive; (3) number of minutes or hours of instruction, position in sequence of instructional types; (4) products, processes, attitudes, self-perception; (5) prior knowledge, aptitude, cognitive style, values; (6) knowledge, comprehension, problem-solving skills, etc. from Heywood (1982)

Exhibit 3.
The Exercises

LP 1. Concept Learning. To evaluate the research on the teaching of a concept with examples and non-examples. The attributes and values of the concept chosen to be taught. Pre-exercise reading: De Cecco and Crawford (1974) Heywood,(1982), and McDonald (1969). Post-exercise evaluation in the light of Howard (1987) , ch 10/11.
LP 2. Imagery. To plan and implement an Imagery Exercise and evaluate its use in teaching and learning. Pre-exercise article: Galyean (1983). Post-exercise evaluation in the light of .....
LP 3. Decision Making. To teach a decision making hevristic and to evaluate if student skill in decision making is improved by their understanding of decision making. Pre and post course reading: Heywood (1982), Reed (1988), Wales, Nardi and Stager (1987).
LP 4. Matching Learning Styles to Teaching. To obtain the Learning Styles of their students, to design and implement a lesson(s) which take the students through the phases of the Kolb model, and to answer the question should teaching styles be matched to learning styles. Pre-experience. Instruction on and completion of the Kolb and Myers-Briggs Inventories. Post-exercise evaluation in the light of Grasha (1984).
LP 5/6. Experiment. To compare the effectiveness of Discovery or Guided Discovery with Expository Approaches to Learning. Pre and Post exercise reading: Heywood (1982), McDonald (1969), Shulman (1970).

The exercises carried out in the academic year 1989-1990 were repeated in 1990-1991 (Exhibit 3). However, only the concept learning and the comparison of two methods of teaching exercises have been used in each of the years since this course began in 1985. The criterion referenced measures were begun in 1988 and refined in 1989 at the request of the students (Exhibit 1). An impression mark is given independently of the criterion marks whose prime function is diagnostic. The impression mark is based on Iliffe's scale for reports and essays (Heywood, 1989 (b)). These marks may be debated with the students. The aggregate of the last four marks is the final score (grade) for this course. The first lesson plan which is always on the teaching of concepts is used for trial purposes. The content of the lectures has been greatly reduced since the course began. It is now essentially a class based discussion about the requirements of the course together with feedback on the exercises as they are marked.

It will be evident that the reports contain much information about the problems and practice of teaching different theories of instruction. Thus from the data presented on the experiment in which two methods of instruction are compared, conclusions can be drawn with some confidence about the conditions for success of failure in teaching through discovery, guided discovery and expository methodologics since these have been replicated for a number of years. Because this was the case the phrase "Student-Teacher as researcher" came to be the sub-title of the course.

Although the students discuss their difficulties and successes in their reports we decided to establish their attitudes, independently of the reports, by questionnaires which were completed at the time they handed in their reports. Three questionnaires were administered in 1989/90 after the second, third and fourth and lesson activities. In 1990/91 questionnaires (five in all) were administered after each exercise. Since the questionnaires were replicated between the two years with only minor modifications it is possible to look for similarities and dissimilarities between the two groups. There is no compulsion to complete the questionnaires and some were in 1990/91 excluded from the analysis because they were handed in to late.

All students independently of their subject specific methodology have to take this course. There are annual variations in the numbers in each subject area and also in the level which they teach. Schools tend not to allow them to take examination classes. (Examinations are at present taken at the end of the third and fifth years of second level education which begins at the age of 12).

Since there is no reason to believe that there are substantial differences between respondents, as a function of the subject taught or, the level at which they are taught, in respect of the issues to be considered we have aggregated the responses.

Some schools have an additional year (fourth year) which they use for transition and, or vocational preparation courses.

A detailed study of the Learning Styles Exercise has been made and published elsewhere (Fitzgibbon, Cameron and Heywood, 1991). One example due to Paula Carroll is given in the Appendix to this work.

Student Apprehension of the Exercises.

Throughout their second level and higher education, students in Ireland are accustomed to a didactic-expository approach to teaching. In second level teaching this is reinforced by the belief (myth) that the public examinations require concentrated exposition to cover the syllabus and inform the memory. This situation was the subject of criticism of the recently published OECD report on teacher education and teaching in Ireland (OECD, 1991). We thought that since students believed that the system was successful that they would be sceptical about the introduction of new methods.

In these circumstances the teacher educator who wishes to introduce variety of method is in conflict with the system, and students who are asked to introduce new methods are put in the position of having to take risks. We conjectured that students would probably be a little apprehensive about initiating new approaches, not only because of peer group pressure, but because of the expectations of the pupils.

A number of our student-teachers do not come directly to us from their degree courses and in some years there is a considerable variation in age. Most, if not all, of the older group will have had some experience of teaching, and even those who are younger may have had some experience of teaching.

In these circumstances it is not surprising that some may report that they had prior experience of the activity in question (Table 1). For example, teachers of religious education who are members of the clergy may well have experienced imagery. Such teachers, it might be assumed, might be more willing to undertake activities which take them outside the prevailing plausibility structure in the classroom. It should be noted that those who took an optional course in psycho-synthesis would have been introduced to imagery and this accounted for much of the knowledge that was reported.

Table 2 shows the level of apprehension experienced before the teacher undertook any one of the exercises.

It appears that the imagery exercise carried with it the most apprehension and the last exercise the least. This result is not surprising since by the time they come to do the last exercise they have already undertaken four such exercises.

Table 3 shows the proportion of the class who felt that it would be risky to undertake the imagery exercise with their class. [There is a correlation with those experiencing apprehension as might be expected but it is not large. It was 0.425 in 1990 and 0.429 in 1991. $X_2 = 13$, 3 df was significant at 0.01 for the 1991 group].

TABLE 1

(a) Have you experienced X work before?

(b) Have you experienced X other than for this lesson plan on the course?

(c) Have you previous experience of X influenced your attitudes toward this exercise?

(d) Had you used X as a teaching technique before?

(e) Had your class experienced X exercise before?

X	(a) Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	(b) Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	(c) Not at all 1989 1990	Not at all 1990 1991	Positively 1989 1990	Positively 1990 1991	Negatively 1989 1990	Negatively 1990 1991
LP 2 Imagery.	24 (33)	23 (29)	46 (64)	52 (66)	QNA	21 (27)	QNA	54 (69)	14 (19)	19 (24)	26 (36)	29 (37)	2 (3)	4 (5)
LP 3 Decision making. *	16 (23)	8 (12)	53 (76)	55 (86)	QNA	6 (9)	QNA	57 (89)	8 (11)	20 (31)	22 (31)	37 (58)	40 (57)	7 (10)
LP 5 Experiment	QNG	QNG	QNG	41 (64)	QNG	22 (34)	QNG	41 (64)	QNG	8 (13)	QNG	33 (51)	QNG	1 (0)

X	(d) Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	(e) Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991
LP 2 Imagery.	15 (21)	12 (15)	57 (80)	65 (82)	13 (18)	6 (8)	54 (75)	70 (89)
LP 3 Decision making.	28 (40)	20 (31)	31 (44)	33 (52)	14 (20)	9 (14)	53 (76)	51 (80)
LP 5 Experiment	QNG	15 (23)	QNG	47 (73)	QNG	27 (42)	QNG	34 (53)

QNG = Questionnaire not given.
QNA = Question not asked.
Figures in brackets are approximate percentages.
Nil responses are not given.

* The question was faulty in that imagery was printed instead of decision making. Most respondents spotted the error.

TABLE 2

Were you apprehensive about the conduct of the X exercise?

LP 3. 1989/1990 N = 70	Very much so		Some apprehension		A little apprehension		Not at all	
	1989 1990	1990 1991	1989 1990	1990 1991	1989 1990	1990 1991	1989 1990	1990 1991
X								
LP 1 Concept Learning.	QNG	5 (9)	QNG	20 (27)	QNG	26 (35)	QNG	22 (30)
LP 2 Imagery.	7 (10)	12 (15)	20 (28)	25 (32)	31 (42)	31 (39)	15 (21)	11 (14)
LP 3 Decision making.	5 (7)	4 (6)	11 (16)	14 (22)	20 (29)	17 (27)	32 (46)	29 (45)
LP 4 Learning Styles.	0	1 (2)	0	11 (19)	0	18 (31)	0	47 (27)
LP 5 Experiment.	QNG	1	QNG	8 (13)	QNG	18 (29)	QNG	36 (57)

Figures in brackets are approximate percentages.
Nil responses are not given.
QNG = Questionnaire not given.

TABLE 3

A Did you consider it risky to try this X exercise with your class?
B Having taken the risk, was it worth it?
C Would you be willing to take other risks in the future?

	A Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	B Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	C Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991
X												
LP 2 Imagery.	26 (36)	34 (43)	46 (64)	45 (47)	55 (76)	65 (82)	7 (10)	4 (5)	67 (93)	77 (97)	2 (3)	2 (3)
LP 3 Decision making. QNA.												
LP 4 Learning Styles.	0	12 (21)	0	43 (75)	0	0	0	0	0	51 (89)	0	2 (4)

QNG = Questionnaire not given.
QNA = Question not asked.
Figures in brackets are approximate percentages.
Nil responses are not given.

There was therefore little difference between the two years, and anecdotal evidence suggests that this was also the case with earlier groups.

It is evident that having taken the risk that they thought it had been worth the effort, and the majority would be willing to take risks in the future.

In sofar as those who had had experience no connection was found between apprehension and risk ($X2 = 5.95$. 6 df, not significant for the 1990 group. The correlation was 0.052).

The perception of risk relates to both the perceived behaviour of the class as well as to the learning value of the technique. Sometimes as many as a half of the student-teachers told their pupils that they were participating in a research exercise for Trinity College. They undoubtedly hoped that this would help with discipline, and some reported that it helped motivation (Table 4).

On the whole it seems that where there were discipline problems they were not serious, and were quickly resolved. It is interesting to note that in all activities and in each of the years surveyed that upwards of 20 percent reported improved discipline among those who are usually naughty (Table 5).

The value of the activities.

Within the framework of didactic teaching to which the student-teachers are used and its perceived success in public examinations, we predicted that the teachers would be sceptical about the value of the activity before it began. While this was true for some the proportion was less than expected. In most cases over fifty percent said they were open-minded (Table 6). This of course, is based on self-reporting. we have no way of estimating how accurate their self-assessment is.

After the exercise had been completed the majority of students reported that the exercises had been successful in achieving their cognitive and affective aims. Inspection of table 7 does not suggest that there were many differences between the two groups involved.

If there is some doubt about the interpretation of "cognitive" and "affective" in these tables there can be no doubt that the majority of students in both groups found the exercises to be valuable, and moreover they would try them again albeit with a different class (Table 8).

The effects of the exercises on the student-teachers role.

It seems that for between thirty and forty percent of each group that each activity demanded from them a considerable change in their attitudes toward teaching (Table 9).

TABLE 4

In your conduct of the X exercise, did you tell the class it was part of a Research Experiment?

X	Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991
LP 1 Concept Learning.	QNG	4 (5)	QNG	69 (95)
LP 2 Imagery.	25 (35)	36 (47)	47 (65)	40 (51)
LP 3 Decision making.	QNA	19 (30)	QNA	45 (70)
LP 4 Learning Styles.	0	39 (68)	0	16 (28)

QNG = Questionnaire not given.
QNA = Question not asked.
Figures in brackets are approximate percentages.

TABLE 5

A Did you have behavioural problems on this occasion with your class?

B What was the effect of the X exercise on discipline?

X	A Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	B No change in overall discipline 1989 1990	1990 1991	Improved discipline among those who are usually naughty 1989 1990	1990 1991	Made the class very naughty than usual 1989 1990	1990 1991
LP 1 Concept Learning.					QNG	57 (78)	QNG	13 (18)	QNG	3 (4)
LP 2 Imagery.	25 (35)	27 (34)	47 (65)	52 (64)	40 (56)	30 (38)	20 (28)	40 (51)	10 (14)	9 (11)
LP 3 Decision making.	17 (24)	12 (19)	52 (74)	52 (81)	51 (73)	22	14 (20)	17 (27)	3 (4)	2 (0)
LP 4 Learning Styles.	0	0	0	0	0	22 (39)	0	14 (25)	0	2 (3)
LP 5 Experiment.	QNG	6 (9)	QNG	56 (88)	QNG	38 (59)	QNG	21 (33)	QNG	3 (5)

QNG = Questionnaire not given
Figures in brackets are approximate percentages.
Nil responses are not shown.

TABLE 6

Were you sceptical about the value of teaching X before you began?

X	Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	Open minded 1989 1990	Open minded 1990 1991
LP 2 Imagery.	19 (26)	26 (33)	23 (31)	10 (13)	31 (43)	43 (54)
LP 3 Decision making.	QNA	16 (25)	QNA	17 (27)	QNA	24 (38)
LP 4 Learning Styles.	0	14 (24)	0	12 (21)	0	31 (53)
LP 5 Experiment.	QNG	7 (11)	QNG	20 (31)	QNG	37 (58)

Figures in brackets are approximate percentages.
Nil responses are not shown.
QNG = Questionnaire not given.

TABLE 7

In your opinion was the exercise X successful/ unsuccessful in achieving its (a) cognitive and (b) affective educational objectives?

	Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991
(a) Cognitive				
X				
LP 2 Imagery.	65 (90)	69 (87)	5 (7)	9 (11)
LP 3 Decision making.	55 (79)	58 (91)	9 (13)	3 (4.5)
LP 4 Learning Styles.	0	0	0	0
LP 5 Experiment.	QNG	54 (84)	0	4 (6)
(b) Affective				
X				
LP 2 Imagery.	89 (64)	65 (82)	2 (3)	7 (9)
LP 3 Decision making.	35 (50)	47 (73)	7 (10)	7 (11)
LP 4 Learning Styles.	0	0	0	0
LP 5 Experiment.	QNG	53 (83)	QNG	2 (3)

As set in 1990 the question could have been misinterpreted.
QNG = Questionnaire not given.
Figures in brackets are approximate percentages.
Nil responses are not shown.

TABLE 8

A Having done the X exercise, do you think it was a valuable/not valuable aid to your teaching?

B Will you try the X exercise again albeit in different circumstances with a different class?

	A Valuable 1989 1990	Valuable 1990 1991	B Not valuable 1989 1990	Not valuable 1990 1991
X				
LP 1 Concept Learning.	QNG	69 (95)	QNG	4 (5)
LP 2 Imagery.	67 (93)	75 (95)	4 (6)	4 (5)
LP 3 Decision making.	62 (89)	59 (92)	7 (10)	3 (5)
LP 4 Learning Styles.	0	0	0	0

Figures in brackets are approximate percentages.
Nil responses are not shown.
QNG = Questionnaire not given.

TABLE 9

A Did the X exercise demand from you a considerable change in attitude toward your teaching?

B Have you experienced a permanent change in teaching as a result of the X exercise?

C Did the X exercise make you change your role as a teacher?

N means no questionnaire issued (No LP1 for 1989/90, no LP 5/6 for 1989/90).	A Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	B Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991	C Yes 1989 1990	Yes 1990 1991	No 1989 1990	No 1990 1991
X												
LP 1 Concept Learning.	QNG	28 (38)	QNG	44 (60)	QNG	38 (52)	QNG	33 (45)	QNG	QNA	QNG	QNA
LP 2 Imagery.	33 (46)	34 (43)	38 (53)	43 (54)	17 (24)	31 (39)	54 (74)	46 (58)	26 (36)	37 (47)	46 (64)	39 (49)
LP 3 Decision making.	25 (36)	22 (34)	44 (63)	39 (61)	0	20 (31)	0	39 (61)	20 (29)	21 (33)	49 (70)	41 (64)
LP 4 Learning Styles.	0	25 (44)	0	31 (54)	0	31 (54)	0	23 (40)	0	0	0	0

Figures in brackets are approximate percentages.
Nil responses are not shown.
QNG = Questionnaire not given.
QNA = Question not asked.

Small correlations between the exercises indicate that each type of activity had a different influence on the students (High correlations between the exercises indicate that it is the same group of students who are influenced by each activity). In the case of the 1990/91 group these conclusions are supported by their answers to the general questions at the end of the last questionnaire.

Of more interest is the fact that thirty percent or more claim that the activity caused them to undergo a permanent change in teaching as a result of the activity (Table 9). That the exercises caused them to change their role as teachers is indicated by the fact that upwards of thirty percent reported this to be the case (Table 9). Once again inspection shows little difference between the two groups when compared.

Overall evaluation.

In the final questionnaire to the 1990/91 group general questions about all the lesson planning exercises were asked. The results are given in Tables 10 + 11. It will be seen that the majority of students received some or considerable help from the activities in obtaining the goals of the course.

Overall it seems that the majority believe that the lesson plans did give them insights into teaching which they would not otherwise have had, that they did bring about changes in their attitudes toward teaching, and that most of all they brought about changes in the quality of their teaching.

Training in Reflection.

An independent source of evidence is provided in other information which these students have to keep. One of us (AF) introduces them to the techniques of reflection during the induction course and subsequently the students are required to keep a journal. The journal must include:

an educational autobiography; a description of school in terms of numbers, ethos, discipline, codes, physical conditions; description of class taught; observations of classes taught by other teachers; significant events; development of self as teacher and learner; development of key points (such as Ripple effect, concept formation) during the year; an evaluation of entries in the light of their personality types as measured by the Kolb and MBTI inventories; an evaluation of the experience of the course.

The final entry, which was written this year as part of a word processing exercise, was short for those students lacking keyboard skills. However an initial content analysis of these final submissions were interesting especially when it is recalled that there is no restriction or requirement to include any point.

TABLE 18

Answers to a question set about the whole course at the end of the final questionnaire (1990/91).

In what way do you think the lesson plan exercises have helped your performance as a teacher and understanding the role of the teacher?

	Considerable help	Some help	No help	No answer
Insights into Student learning and behaviour.	43 (67)	18 (28)	2 (3)	1 (2)
The Professional Role of the teacher.	28 (44)	28 (44)	7 (10)	1 (2)
Insights into the repertoir of available instructional methods.	38 (59)	25 (39)	0	1 (2)
The value of being ones own researcher in the classroom.	38 (59)	21 (33)	4 (6)	1 (2)
Understanding self-accountability.	33 (52)	21 (33)	8 (12)	2 (3)
Disappointing on the repertoir.				

Figures in brackets are approximate percentages.

TABLE 11

Answers to a question set about the whole of the course at the end of the final questionnaire (90/91).

	Did (better)	Did (worse)	Did not	No answer
The Lesson Plan Exercises did/did not bring about a temporary change in my attitudes towards teaching for better or worse.	50 (78)	1 (0)	7 (11)	6 (9)
The Lesson Plan Exercises did/did not bring about a permanent change in my attitude towards teaching.	48 (75)	0	11 (17)	5 (8)
	Did		Did not	
The Lesson Plan Exercises did/did not give me insights into teaching which I would probably not have obtained had I not done the exercises.	59 (92)	0	2 (3)	3 (5)
The Lesson Plan Exercises did/did not temporary help me improve the quality of my teaching.	52 (81)	0	6 (9)	6 (9)
The Lesson Plan Exercise did/did not bring about a permanent change in the quality of my teaching.	50 (78)	0	7 (11)	7 (11)

Figures in brackets are approximate percentages.

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TABLE 12

Answers to a question set about the whole of the course at the end of the final questionnaire (90/91).

A Do you think the intention of the course to help you evaluate your own classes (i.e. to be your own researcher in the classroom) has been obtained at this stage of the course?	Yes 32 (50)	Partially 29 (45)	No 2 (3)	No answer 1 (0)
B Do you think specific training through the assessment of lesson planning exercises chosen by yourself to solve your own problems would better achieve the teacher as researcher goal of the course?	Yes 36 (56)		No 20 (31)	No 8 (13)

Figures in brackets are approximate percentages.

Negative and positive comments are made. In all 83 journal submissions were received fifty three or 64% said that they had enjoyed the course and found the Higher Diploma programme good, although several found the work load too heavy (twenty eight {34%}) or, complained of being 'tired' (twenty one {25%}). Three {4%} felt the amount of work was alright. Five {6%} considered the course to be too academic.

Most comments referred to the student's own development with thirty four {41%} reporting an increase in self-confidence, 28 {34%} knowing more done themselves or others, and fourteen {17%} as having matured. Four {5 %} reported that they would not teach next year. One said "never again"! This is balanced by fifteen {18%} who looked forward to teaching next year with thirteen {16%} finding it a challenging experience.

Some comments made relate to the course in Applied Psychology of Instruction. Twenty two or 26.5% made such comments regarding the lesson plans as " being central to my development " or " encapsulated the brunt of the psychological implications for pupils' learning". This number is in contrast with the only 2 negative comments .

In addition twenty six {31%} students chose to comment favourably on the Learning styles lesson, seven {8%} on the Imagery lesson eight {10%} on the Guided Discovery lesson, five {6%} on Decision Making and two {2%} on the Concept lesson, which was held in the first term. There were two with negative comments were made on the learning styles lesson but these negative comments related more to objections to the "boxing" of individuals than to the lesson plan as such.

The Student-Teacher as Researcher.

The lesson plans which the students implement are in the nature of replication-research. A hypothesis is selected from the literature and evaluated by a lesson or lessons designed to test the hypothesis as well as to continue the pupils' development in a particular subject area. While such activities help students to evaluate the theory they do not guarantee that the student is able to hypothesize about the happenings in the classroom or, to design a mini-research programme which will help them to evaluate those hypothesis.

Although no practice is given in this dimension of the "student-teacher as researcher" model, it is discussed in the lectures, examples are given, and this year we included a compulsory question in the examination paper on the topic. We had done this in the past with a little success.

The question read as follows:

"Self-accountability necessarily implies continuing research in the classroom by the teacher. What do you understand by the term "research" in this context? Give a detailed example of such research preferably from your own experience. (You may not use material from your assessed lesson plans in your answer to this question)."

The first sentence arises from the link which is made between the courses in the Applied Psychology of Instruction and Curriculum Studies. This is to the effect that the lesson planning exercises should assist the student-teacher to develop skill in educational connoisseurship and self-accountability (Heywood, 1984).

It will be appreciated that the skill required to promote a hypothesis is quite different to the skill required to test a hypothesis based on literature. The analysis of the data in the answers to the examination question suggests that much more training is required if all the student-teachers in our programmes are to acquire this skill.

Of the 84 students who answered the question we are of the opinion that we could say without any hesitation that the intentions of the question were completely met by thirteen (15%). There was a slight hesitancy about another eleven (13%) while eight (9%) more partially met the requirement. Around 35% therefore seem to have grasped what the problem is. This does not mean that all the other students failed to get the pass mark; It does mean that these particular students obtained excellent marks.

An important feature of those who obtained excellent marks was that they understood the nature of research and offered definitions of same whereas the other group saw it as trial and error. This is not to suggest that the answers from this group did not display insight; Many did.

The problems presented for research ranged from the large-scale to the small and simple. Examples are given in Appendix A.

It is evident that the 'excellent' group read widely and make good use of the literature.

It is also evident that the group require more training both in the perceptual skills required for the formulation of hypothesis and the techniques of research as opposed to trial and error.

Discussion.

This course originated from the inability of written examinations to test if our student-teachers had attempted to try out the different theories of instruction which they were told about during lectures in their teaching practice.

The random process of reading a little or a lot of literature before a written examination was replaced by a programme of activities in which the literature relating to particular instructional activities had to be read in order to design the activity.

Since they has also to prepare lesson plans no more and no less was being asked of them than in the traditional system. All that changed was that the reading demanded of them was redistributed throughout the year. At the same time the assessment became more formalised since it was no longer open to the vagaries of examination preparation, and for many this created more rather than less work, which further underlines the limitations of written examinations. Moreover the coursework covered the syllabus and provided its own integration. Thus in these circumstances (which is not always the case) an examination was not required for purposes of knowledge integration. Thus the essential addition to that which had been normally required was the evaluation. The first evaluation was included to help students develop skills in connoisseurship while the second was to demonstrate that carefully designed tests and relatively simple statistics can often deny or confirm, question or elucidate their initial perceptions. To continue with the redistribution of the work load we have begun to relate the mark in the test/measurement component of the evaluation to another course in the programme on Statistics and Evaluation.

Three years ago when the students asked how the exercises were marked, the tutor (J.H.) introduced a criterion-referenced schedule. Further questioning yielded a much more detailed schedule. These schedules had a noticeable effect on the work done by the students, and evidently increased the amount of the work done. The tutor would argue that this was to their benefit. Steps have been taken to reduce the work-load. One has been to further limit the reading, and also to set it in two parts one part is done to formulate the hypothesis, and the other of more recent literature at the time of the evaluation so as to inform that evaluation i.e. having now read this new literature would the student have done something different (Exhibit 3)?

Since there is much work on learning styles in the lecture programme, and since the hypothesis is dictated, the rather more extensive summaries required for the other exercises are dispensed with for this activity.

The work load on the tutor is immense since the assessments take around 100 hours spread throughout the year. Routines have had to be developed to accommodate this work and also to meet with, however briefly, each student so that each student receives written comments in addition to the criterion-referenced measures.

In its recent report on Teacher Education and Training in Ireland the OECD is very critical of the limited and didactic approach to teaching which second-level teachers adopt in the Republic. Our experience is that without a course of the kind we have described our students easily fall prey to the same habits. Many confirm in their reports that without this course they would neither have experienced, or understood the value of the different approaches to teaching which they were challenged to undertake.

Moreover their work demonstrates that there is a valuable and positive relationship between theory and practice which without this course they would have brushed aside. There is no doubt that the weaker students find this course difficult (but there is no evidence to suggest that they do not perceive its value), and it is this among other things which would lead us to take issue with the OECD assessors.

We recommended to them that this one year course should be extended to two years. There is a State regulation that secondary teachers on completion of their training should not be registered until they have completed a probationary year. We believed that during this year they should attend university for further study in the curriculum and method. The evaluation of the course in the Applied Psychology of Instruction which we have presented above suggests that the students would benefit if we could reduce the load in the first year and extend in into the second. This would give further reinforcement to any change in attitudes to instructional methodology made by the students during the years training. As things stand if we reduce the number of exercises we reduce the number of instructional strategies to which the students are exposed, and this is to go against the recommendations of the OECD assessors with which we agree. It is our view that our work clearly demonstrates that an experienced based programme of training will severely limit the student-teachers potential unless it has a strong theoretical foundation. Linking the two leads to a framework of insights which could not except with luck be obtained in any other way.

Finally it should be noted that as this course is part of a programme for a university diploma that the lesson plans and examination papers are subject to independent scrutiny by an external examiner, and his concerns with the work load experienced by the students are consistent with those reported here and a cause of some of the actions taken which are reported above.

Appendix A.

Extracts from answers to the question on the Student-Teacher as Researcher in the Written Examination. (It should be remembered that these were written under the pressure of time in response to one of three questions in a three hour paper).

Example 1.

One particular aspect I have found very difficult to get across over the past few years is the concept of spatial perception. Many aspects of Geography require the student to visualize three- dimensional objects. The teaching of the universe, landforms are two obvious ones but the one that produces greatest difficulty is that of transfering a two dimensional representation into a three-dimensional image eg. mapwork.

Gardners' theory of Multiple Intelligences states that each individual has many types of intelligence, linguistic, mathematical, musical spatial etc. Some are more highly developed in some than in others. It is also true that school curriculum, based as it is on the ideals of a 'pure' education, espoused in the nineteenth century, have concentrated on the values of a liberal education to the exclusion of the technological aspects of education. This means that student ability to perceive spatially is very poorly developed at both primary and second levels.

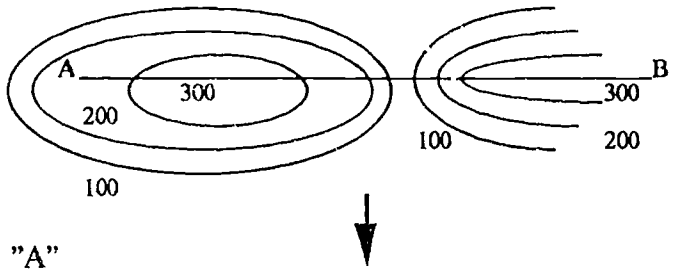
With this in mind it can be seen that the interpretation of maps in first year presents difficulties. Some aspects are possible, rivers, sea, vegetarian can all be covered adequately because of a colour code which allows some form of recognition. The main difficulty I have is, the interpretation of shape and relief. Although there is also a colour code available for height on Irish Orchance Survey maps it does not give an accurate enough picture. This is particularly evident when one is trying to teach cross sections.

A cross-form section is taken by transforming the contours that run across a line onto a graph, so that "A" becomes "B".

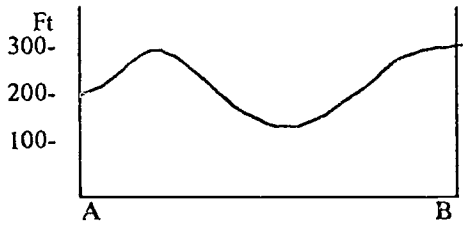
It is this principle of transfering a two dimensional image into a three dimensional one that is so difficult for pupils of age 12 and 13. it is not that they can not do the mechanics of it, although this actually causes problems for many, but the fact that they can not see what they have done even when the process has been carried out successfully.

In order to assess my ability to teach this lesson a number of possible teaching methods must be looked into. It would seem possible to adapt the cycle of learning as put forward by Kolb in order to teach this. The children could be told to do it from a book, the teacher could go through it practically with them, a film showing how height is turned from reality to a map could be shown and finally a model could be devised to show how it worked.

It is the latter method which interests me most for it is only by seeing and doing that the children will truly understand (Piaget).

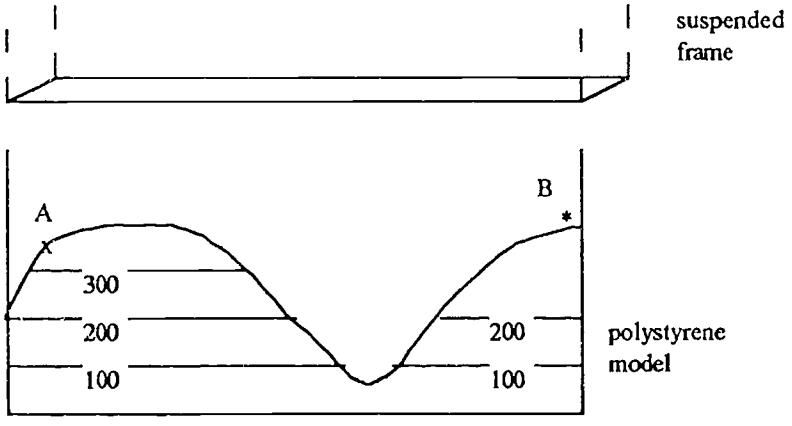


"A"



"B"

What I suggest would be a polystyrene model of the hills shown in diagram A. Over this is placed a rectangular frame suspended a foot above the model. This would represent the map. The hills on the map would be marked with contours at the appropriate heights and a brightly coloured flexible strip would be placed upon the model to indicate line A-B. This could be seen from the side and from above.



Armed with this model and a map it should become a relatively straight forward case to instruct. In order to test the validity of the new technique I would use the Guided discovery method of teaching.

1) Show the map with line A and B on. Tell them we need to produce a cross-section.

2) Show the model and lift off plastic strip A-B to show completed cross-section.

3) By looking through the triangle it is possible to show line A-B crossing the contours and so show how one constructs a cross section.
One can test the validity of this method by a comparison test with another group taught by the old method at a time distant from the class.

Example 2.

I have found during my year of teaching practice that many otherwise able students, receive very poor exam grades, because their performance is inhibited by stress factors and other external pressures. For example, this year I conducted and carried out most of my lesson plans in a small Latin class.With each lesson plan I found that my students experienced beneficial results in their tests and grades through the utilisation of new skills and new learning strategies. I compiled a detailed list of entering characteristics which showed that the students were of above average capability and should do well in the up and coming school examinations. However, after the exams, and when I had marked their papers, I found that one student had received a rather disappointing result. She had passed the exam, but her mark did not in any way reflect her proven ability. I later discussed the result with her and found that she was equally disappointed but not quite so surprised as I had been. It appeared that she never expected to do quite so well in exams as she did in class because in an exam situation she felt nervous, anxious and full of self-doubt. This resulted in an inability to utilize such strategies and skills as problem solving heuristics which we had practised in class and which she had used so successfully. She simply went 'blank' and could not perform up to her usual high standards.
She is not the only individual whom I know of who has this problem. Many students do, and at all levels. It seems to me that it is an extremely serious situation as people can so easily fall into the trap of the self-fulfilling prophesy, where one exam failure, due to nerves and stress, seems to replicate itself and lead to further failures which can blight a child's academic progress, as well as destroying their self esteem.
Therefore I would like to take a class of students for whom I have a detailed list of entering characteristics, and a personal knowledge of their study habits and temperament, and research the effects of applying a conditioned trigger, like the clenched fist technique, to change troublesome emotional states to a more positive state, enhancing their feelings of esteem and thus their exam performance.
I would split the class in two, using one group as a control group, and the other as the experimental group. I would endeavour to ensure that both groups had pupils of similar ages and abilities, and with the same quantity of males and females. I would first ensure that the class as a whole took an examination, the school-Christmas examinations for example.

I would then tabulate the results for both groups, finding the average or mean score of both groups and the standard deviations from that mean score. With this information added to the entering characteristics I would then set about taking the experimental group, on a once weekly basis, and introducing them to the clenched fist technique.

It is important to mention at this point that I would need to ensure that both the control group and the experimental group contained a similar number of individuals who actually felt, after discussions, that their exam performance at Christmas had been adversely affected by stress and anxiety.

I would take my experimental group and slowly introduce them to the use of a conditioned trigger to bring about a calm, relaxed and confident mental state. Briefly, the procedure involves first concentrating on breathing to achieve a pleasant, relaxed state, and whilst in this state, clerching one's dominant hand. This dominant hand is then to act as a trigger to an achievement of this pleasant state with which it has been associated. In later sessions the individual experiences, in this semi-hyponotic state, feelings of anxiety, which might be conjured up from previous exam-experiences. The individual then clerches the non-dominant hand and directs these feelings to travel down to this hand and become locked within it. The individual then clerches the dominant hand and triggers the pleasant emotional state, whilst simultaneously opening the non-dominant hand and releasing the 'bad' feelings.

Having practised these techniques with the experimental group I would then recommend that they use them at the Easter exams. After the exams I would tabulate the results of the control group and the experimental group, finding the mean scores and standard deviations, and I would use these statistics to assess (i) whether or not the experimental group had experienced a noticeable improvement in their results since Christmas, and (ii) whether or not their results were significantly better, on average, than the control group who had not had the benefit of training in the use of an ego-enhancing technique.

I would of course initiate a discussion with the experimental group to establish their personal feelings about how the technique affected their performance, and whether or not they found it helpful or not.

I feel that research like this might best be conducted on more mature students, perhaps those in fifth year of secondary school.

Example 3.

The four stages of a lesson are Introduction, Presentation, Application and Conclusion. The concluding stage is often rushed because of taking too much time at the other stages. The conclusion stage should be used to reinforce what has been taught.

What I would like to examine is the benefit of reinforcing by using a different teaching method to that used at the Presentation and Application stages.

For example, if I have taught them something by expository method, and the application has involved expository teaching on my part, surely it would be more effective to reinforce the teaching by getting the students to do some discovery work, however little, by way of conclusion.

Similarly, if a topic has been taught by using discovery or guided discovery, reinforcement by means of exposition might be helpful, especially if the topic is difficult and needs clarification.

Due to pressure of the course and the master-teacher I have not yet been able to try this out. However, I would like to in the future when I am not as restricted. Teaching classes in the same year would be helpful.

I would teach both classes using the same methods and approaches during the introduction presentation and application stages. I would conclude by teaching one class in the same style as had been used throughout the lesson and by teaching the other class with a method different than had been used for the first three stages. Setting the same test one week later would establish which method was the most useful. Account would have to be taken of ability differences and so on. The experiment could be repeated a number of times try out variations on it. For example, one could test whether teaching by discovery and reinforcing by expository is more effective than teaching by expository and reinforcing by discovery.

Example 4.

A piece of research I would like to carry out at a future date is that of analysing the use of role-play in aiding student learning and retention.

It is very often said that Shakespeares plays were not written so that they would be studied laboriously by students sitting at their desks in the 20th century. How much more easier would Shakespeares writings be understood if students observed real people in those situations. This same argument applies equally well to my own subjects; History and Religious education.

We must remember the influence of television and videos on young people. While many find it difficult to recall the story of Daniel O'Connell, they find it quite easy to recall the film on T.V. the previous night.

The way I hope to approach this research is by teaching the same topic in two different ways; eg. the Industrial Revolution in Britain. I would first of all use the expository method of teaching with one group of students and use role-playing with the other group. My aim in teaching about this topic would be to educate for democracy. My objective would be to give an understanding of life at this time in history.

I would expect to find that these students who either watched or engaged in role-playing would more easily remember the material. If so, this would indicate that role-playing helps students understand knowledge more easily. It may not, however, improve the students critical thinking skills.

Example 5.

During the year of teaching, many aspects of teaching have caused me to sit back and think, and hence experiment. One of the first occasions on which this occurred came in my first week of teaching. In one of my first year classes, I noted that I went to the back of the room to say something, the whole class went totally silent before I said anything. This came somewhat of a surprise, and so caused me to wonder whether this was a once off chance happening, or was there something in the idea of speaking from behind them. All the classrooms I teach in are similar in layout, with all students facing the front of tables which are made to seat four, therefore no one could see me at the back of the classroom, without turning around. This caused me to think about my positioning in the room and whether there were certain places within the room that were better for teaching group discussion, giving notes, giving instructions, etc. As I varied my position in the classroom, I found that whatever the year being taught and whatever their ability, the same responses came.

Upon finding this, I began to theorize why this should be so. In the end, I came to the conclusion that the pupil was uncomfortable because he could not see me. This lead to two things: (i) he was unsure as to whether I was watching him or not, and so was not encouraged to 'mess' and (ii) it was possible to see what was in front of the student much easier than from the back of the room.

Having found this, I shared this discovery with another teacher in the school. He said he had never noticed it all that much though he found it worked better at different times of the day.

So in this way, my original idea or observation has been thought through, which has eventually led on to another aspect coming under consideration.

Example 6.

I tried to combat this by designing tests that were within, what I judged to be their ability range. I marked them so as to fail as few as possible. When pupils did well, I praised their effort and hard work. When pupils did poorly, I criticised their lack of effort, but never their ability. I tried to make them believe that ability did not really count as much as good hard work and effort. Gradually over the year I noticed a perceptual change among some of the students.

They were willing to tackle the more difficult topic and did not give up so easily when attempting homework. This limited form of success had given them confidence and persistence. In their end of the year test, some did surprisingly well, attempting all the work. At the beginning of the year this would not have occured, instead I would have received many unanswered scripts. By my own research in my classroom I believe I had helped these girls achieve. This research was triggered by work I had read. Like the Hawthorne studies in Chigago, I had found two sub-organizations in the school, one which pursued a work ethic of high productivity and achievement, and one which supported and reinforced a low achievement standard. Like Hawthorne, I found it beneficial to work with the children to modify this ethic and thus raise their standards.

Researching Instruction while Student-Teaching
by
Paula Carroll

Comments on Learning Style Inventory.[1]

I administered the Learning Style questionnaire to my 1st year German class one month before doing the lesson. On that day I was struck by the confusion of the students as they battled with the meanings of the questions. Though they were supposed to be suited to 'junior' level, some of the vocabulary used was incomprehensible to the students so they had to depend on my interpretations and explanations. I felt the language was too abstract for 12 year olds to understand.

I also feel that in answering the questions, people (children and adults) tend to choose the answer which corresponds to how they would *like* to see themselves as opposed to how they *really* are. (I am still not sure to what extent I personally was guilty of this tendency in my own answers at the beginning of course when I also answered it in September 1990).

I therefore feel intuitively (sic) that this Learning Style questionnaires validity, especially in relation to younger children, is doubtful. Highhouse and Doverspike's research on the Inventory cited by Heywood in "Assessment in Higher Education" 1989, p 194, has shown it to measure preferences rather than cognitive style. This supports at least one half of my contention.

Because of the doubts expressed above I administered the Learning Styles questionnaire a second time one month later. The results are striking (see attached grids).

Of the 21 students who answered the questionnaire both times, 7 students of them (i.e. one third of the total) changed learning styles between the 1st and 2nd answerings!

Grid no1.
Distribution of learning styles after 1st answering of questionnaire February 1991.

Grid no 2.
Grid shows positions of each student within the quadrants after each answering of the questionnaire.

* The number (2) indicates person's position within a quadrant after March questionnaire.
* Lines connecting points indicate the extent of them change.
* A green line indicates a change within the same quadrant.
* A blue line indicates a change from one learning style to another.

Conclusions?

Trying to shut out the fact that this fundamental lack of reliability might invalidate the whole experiment and clinging to the fact that different styles of approaching learning tasks are at least observable (whether Kolb has got the labels right or not), I forged ahead and tested the theory on the more or less reliable results I had got.

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[1] Tutor's note (J.H.) The student-teachers are required to give a detailed account of each of the students in their class at the beginning of the lesson plan. This is to encourage them (i) to learn how to judge and report progress or lack of progress, and (ii) to better understand their pupils.
They are allowed to carry this information forward to each new lesson plan and encouraged to amend it. This was the case with this report. The class taught was a mixed-ability group of first year boys and girls (age range 12-13 years).
The new topics covered since the last lesson plan are german school system, letter writing to penpals, birthdays and starsigns, and the new grammar covered are prepositions, brief introduction to dative case, present tense of common verbs, ordinal numbers.
The Kolb plots and analyses have to be submitted with the report as well as examples of the students work. These have been omitted from this paper.

Lesson Plan as related to theory to be tested.

Having ascertained the learning styles of the students (to as reliable an extent as possible given the reservations expressed earlier) I wished now to teach a topic (1st, 2nd, 3rd person singular of the present tense in German verbs) by a method which would pass through the four stages of the learning style. I gave a test after each phase of the cycle to check if students with the particular learning style that corresponded to this phase did indeed learn more in this phase than in any other one. I also gave them a questionnaire regarding their preferences for any particular phase to check if their preferences corresponded with their Learning Style.

the students had a pre-test on verbs to ascertain their level of knowledge before the lesson was taught. They were tested again one week after the lesson to check for any improvement in performance (see attached test 1 week after lesson).

The phases of the lesson were:

1. Interviewing 5 German students (present on exchanges in school) which was intended appeal to those who like concrete action; the accommodators.
2. Brainstorm/discussion afterwards on what they found out about Germany,the Germans etc, and then to focus on the grammar area to be covered as a result of the experience of interviewing. This is intended to appeal to those who like to reflect on concrete experience and generate ideas; the divergers.
3. Working out from a written interview the rules for verb use in German. This is intended to appeal to those who like to work out systems and theories based on their reflections; the assimilators.
4. Writing up a report on any one of the people they interviewed. This is intended to appeal to those who like to use the rules and theories to solve problems and carry out tasks; the convergers.

Lesson Plan.

Aim. (Over a series of classes)

To teach the students the present tense of common German verbs.

Non-behavioural objective.

To reinforce use of the present tense (1st,2nd,3rd person singular) of common German verbs (both strong and weak). This is to be achieved by means of a four phase lesson, each phase of which corresponds to a quadrant of the Kolb learning cycle.

Behavioural objectives.

At the end of the lesson (spanning 4 class periods) the students will be able to:

(a) give a short description of themselves or another person (age,address,hobbies etc) both orally and in written form.

(b) produce the 1st,2nd,3rd person singular ending of common German verbs orally (within context).

(c) write the verb endings correctly.

Evaluation immediately after class.

Teaching verbs using the Kolb cycle in the way I had chosen took four class periods but I felt it was well worth it.

(a) Because verbs are such essential basic building blocks of a language. The students had already been introduced to the present tense of verbs but I knew that they would need lots of reinforcement and practice (often because they lack the concepts such as person, number etc. which are essential to an understanding of how verbs function in another European language).

(b) Because they had the opportunity to interact with native speakers of the language they are learning. this brought the reality of German language and culture much closer to them and gave them motivation to learn to use the language properly.

The students' excitement (and delirium at times!) convinced me of the positive nature of such an activity.
Having gone through the four phases of the lesson I was struck by the thought that the level of enthusiasm for phase 1 was so great that they would surely all reply that this was the phase they enjoyed most no matter what style they themselves had.
Despite the fact that the majority of the class were accommodators and this could explain why phase 1 was so popular, I am left with the impression that within the range of activities compatible with any one quadrant of the Kolb cycle, some or more exciting/enjoyable then others. For instance with the "active experimentation" section I chose to get the students to write a report. Had I instead invited into the class other members of other first year German classes, got my students to interview them and then compare typical Irish answers with typical German answers, this may well have generated more interest and so the answers to the question "Which phase did you prefer?" might have been quite different. I therefore believe that the activities chosen for each quadrant should be carefully designed so as to offer an equivalent level of interest. This I think was not the case in my lesson where the concrete experience phase was by far and away the most enjoyable experience the children had all year.
Overall the classes went smoothly, the students cooperated well and were motivated by the fact that this was an experiment.
Personally I enjoyed phases 1 and 2 most which theoretically supports the fact that I fall into the 'diverger' category of the Kolb cycle. However I cannot say that "I felt most comfortable teaching in this phase" as all I did for phase 1 was keep the noise level down and in phase 2 I chaired the discussion. Part of my enjoyment came from knowing that the students were enjoying themselves and part, from the fact that I like to see students active, involved and 'learning' as opposed to 'being taught'. Any activity which fits the above description, I would find enjoyable. It does not necessarily have to be "diverger-compatible".

Summary of test results + correlation between learning style and a) highest score (b) preferred phase of lesson.

Test results: Interpretations, conclusions, reservations, assumptions.

Pre- and post-tests.
The average result of the pre-test on verbs was 5.45/10 i.e. 55% a result which confirmed my belief that though the concepts of verbs and present tense had been introduced, they had not yet been well assimilated and much more reinforcement was needed.
The average result of the post-test was 6.3/10 i.e. 63%, an overall improvement of 8% which is significant. It indicates that the use of a lesson which passed through all phases of the cycle is indeed useful.
The fact that the material covered was not totally new to the students may have had an influence on the improvement factor.
However, based on experience and discussion with other language teachers, I think it is fair to say that mere repetition of a point is not enough to ensure better assimilation of the concept taught. The method of teaching is all important.

Tests after each Phase.
The results of the tests after each phase do not show any clear pattern apart from the fact that there is a slight overall improvement from phase 1 to phase 4.

Phase 1:	7.05/10
Phase 2:	6.5/10
Phase 3:	6.5/10
Phase 4:	7.09/10

These results surprised me somewhat. There are two main reasons.
(a) I had expected a greater overall improvement from phase 1 to phase 4 as my feeling was that as we progressed through the lesson the students were indeed getting a better grasp of the verbs. 71% is quite a reasonable average score for

the end of the lesson but 70.5 % seems rather high given the low results in the pre-test and that this result (70.5 %) was only after phase 1. Having done an item analysis of this test I conclude that the test was in fact easier than those for the other phases and the results give a false impression of the level of attainment. Had the four tests been better designed so as to be of equal difficulty (a notoriously difficult thing for a novice to do!!) I think the difference between the results for phases 1 and 4 would have been greater and would have given a clearer picture of the improvement.

(b) Though only two of my students are assimilators, most of the students said they felt they had learned most in phase 3 (see summary in lesson plan and attached worksheet for methodology used). This was my feeling too. It appeared to be the phase which made the concept most clear and which best sensitized the students to the rules. Yet the results for phase 3 show no improvement at all on phase 2.

For this, I have no explanation other than that the Gods are trying to confound me...

Correlation between Learning Style and test results.

In only 3 of the 15 testable cases (see attached summary of results) was there a correlation between learning style and phase in which the highest score was achieved i.e. the most learnt.

From these results, then, I have no basis on which to ground the theory that students learn best when using that particular style which the Kolb inventory assigns them to.

Final evaluation.

The objective of this experiment was to verify the hypotheses

(1) Teaching a lesson which goes through the four phases of the Kolb cycle improves learning.

(2) Students learn best in the phase which corresponds to their own style. Therefore matching teaching to learning styles is desirable.

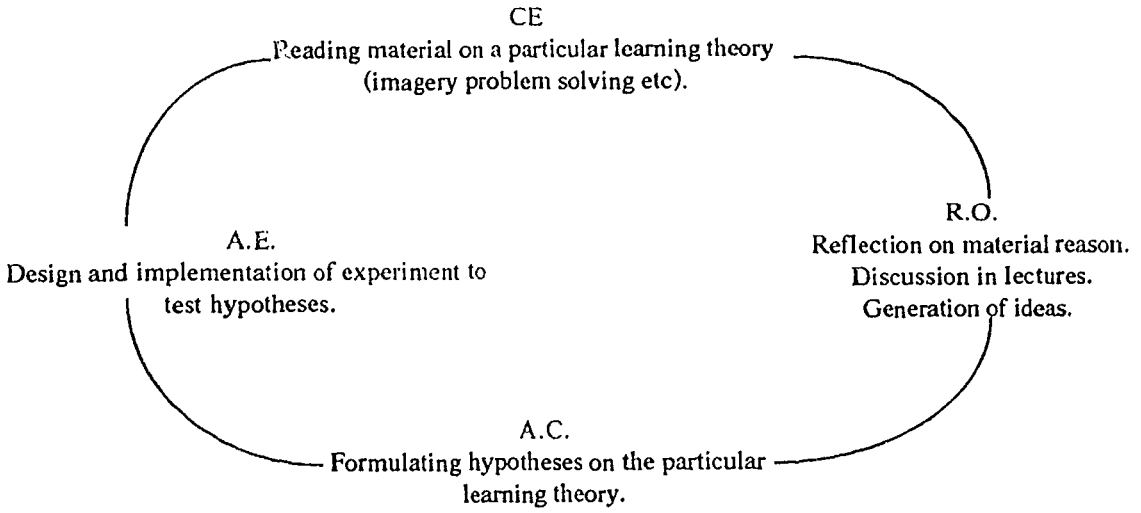
From my experiment hypothesis (1) is proven but there is no evidence to support hypothesis (2) (only 3 students achieved highest marks in the area which corresponded to their learning style).

I also offer the following reasons against hypotheses (2):

a It would appear that using the same learning environment all the time would considerably narrow the range of teaching techniques available for use and learners may get bored.

b It would appear that for fullest learning students should pass through the whole cycle i.e. experience all angles and approaches to the subject matter. This 'stretches' the students when they have to operate in an area which may not suit their style e.g. the majority of my students felt they learnt most in that phase based on abstract conceptualisation though none of them actually listed it as their favourite part.

I would also use my own experience in relation to the lesson plans to illustrate this point. I relate the experience of each lesson plan to the Kolb cycle as follows.



The most enjoyable part of the cycle for me was reading the material and reflecting on it. This again seems to confirm my position in the cycle as a diverger. The most difficult for me was devising the lesson to test the hypotheses, yet I feel the discipline involved in that was good for me.
I had to carry the idea through to the end and the execution of the lesson added a new dimension to my learning and deepened my understanding.

c Once people know their learning style they are provided with a rationale for refusing to engage in any academic exercise which does not appeal to them ("It's not my style"). There is also the danger that people will then feel incapable of dealing with career or subject areas which require skills other than those attributed to them by the Kolb analysis.
I admit personally to having such doubts and feel somehow circumscribed by my 'divergence' (if this is not a contradiction in terms!).
The same doubts which I had about teaching problem solving skills, I hold for matching teaching - learning styles - the fear that one will inhibit creativity and ability in other areas. It also implies a certain lack of respect for the individuals approach. I agree with Heywood's view and his citation of Gibbs (Assessment in Higher Education 1989,p.197) "....it has to be remembered that learners are very idiosyncratic and Gibbs' view that learners should be helped to understand their own strategies cannot be overlooked lightly".

d Above I have proceeded with my analysis assuming that the Learning Styles Inventory is valid. However I have grave doubts about this:
(i) due to my experience of it with my students. These doubts are also backed up by Grasha in his article "Learning Styles" (p.50).
(ii) the predominance of accommodators in the class has led me to the reflection that it is age-related. Many of these students (12-13 yrs) may just be coming out of the period of concrete operations and it is normal that they would have as first preference the 'action' orientated options. Is a measure of learning styles valid before their personality have developed more fully? Will these accommodators change style as they develop?

Learning Style related to rank in class.
The theory is that convergers and assimilators do better in school. However, learning styles may be influenced by the learning environment. Coming from primary school it is normal that they prefer concrete things and action. By the time they leave secondary

school they may be convergers but at the moment there is no evidence in my study to support the idea that convergers and assimilators are doing better then those with other styles (see correlation between class rank and learning styles).
In conclusion then I support the idea that learning is improved by passing through all phases of the Kolb learning cycle but I have no proof of the theory that teaching should be matched to learning style.

Test one week after lesson.

A:	Hallo wie ..... du?	(heißen)
B:	Ich ..... Sabine.	(heißen)
A:	Wie alt ..... du?	(sein)
B:	Ich ..... 14.	(sein)
A:	Wo ..... du?	(wohnen)
B:	Ich ..... in Kassel.	(wohnen)
A:	..... du gern Fußball?	(spielen)
B:	Nein ich ..... Tennis.	(spielen)
A:	..... du Geschwester?	(haben)
B:	Ja ich ..... eine Schwester.	(haben)
A:	..... sie gern Tennis?	(spielen)
B:	Nein, sie ..... Fotos.	(machen)
	und sie ..... gern Musik	(horen)
	und sie ..... gern Rad.	(fahren)
A:	..... ein Haustier?	(haben)
B:	Ja ich ..... einen Wellensittich	(haben)
	und meine Schwester ..... zwei Hunde.	(haben)
A:	Was sind deine anderen Hobbys?	
B:	Ich ..... gern Bucher,	(lesen)
	ich ..... gern fern	(sehen)
	und ich ..... gern Rad.	(fahren)

Test after phase 1.

Hazel: Hallo, wie geht's?
Silke: Gut, danke.

H:	Wie ..... du?	(heißen)
S:	Ich ..... Silke.	(heißen)
H:	Wie alt ..... du?	(sein)
S:	Ich ..... 16.	(sein)
H:	Wo ..... du?	(wohnen)
S:	Ich ..... in Nurnberg	(wohnen)
H:	..... du Geschwister?	(haben)
S:	Ich ..... eine Schwester.	(haben)
H:	Wie alt ..... deine Schwester?	(sein)
S:	Sie ..... 14.	(sein)

In the above sentences fill in the blanks using the correct form of the verb given in brackets.

Phase 2.

Mark:	Wann ..... du Geburtstag?	(haben)
Andres:	Ich ..... am 16-Juni Geburtstag.	(haben)
M:	..... du ein Haustier?	(haben)
A:	Ja ich ..... einen Hund.	(haben)
M:	Wie ..... er?	(heißen)
A:	Er ..... Schlumpi.	(heißen)
M:	..... du gern Fußball?	(spielen)
A:	Nein, ich .....gern Tennis.	(spielen)

M:	Wo ..... du?	(wohnen)
A:	Ich ..... in Kassel.	(wohnen)

In the above dialogue fill in the blanks using the correct form of the verb given in brackets.

Phase 3.
Fill in the blanks in the following sentences using the correct form of the verb given in brackets.

Hallo! Ich ..... Sabine.	(heissen)
Ich ..... gern Musik.	(horen)
Ich ..... einen Bruder.	(haben)
Er ..... gern fotos.	(machen)
Er ..... gern Basketball.	(spielen)
Er ..... eine Katze.	(haben)
Ich ..... in Deutschland.	(wohnen)
Ich mag Irland.	
Ich ..... 16.	(sein)
Ich ..... am 12. Dezember Geburtstag.	(haben)
Wann ..... du Geburtstag?	(haben)

Worksheet for phase 3.

Paul:	Wie Heißt du?
U:	Ich heiße Ulrike.
P:	Woher kommst du?
U:	Ich komme aus Deutschland.
P:	Wo wohnst du?
U:	Ich wohne in Nurnberg.
P:	Hast du Geschwister?
U:	Ja ich habe einen Bruder and eine Schwester.
P:	Wie heißt deine Schwester?
U:	Sie heißt Anna.
P:	Wie alt ist sie?
U:	Sie ist 14.
P:	Treibt sie gern Sport?
U:	Ja sie schwimmt gern und fahrt gern Rad.
P:	Wann hat sie Geburtstag?
U:	Sie hat am 11 Oktober Geburtstag.
P:	Hast du ein Haustier?
U:	Ich habe einen Affe, Anna hat einen Tiger. Und Markus hat ein Krokodil!
P:	Wie heißt dein Bruder?
U:	Er heißt Markus.
P:	Treibt Markus Sport?
U:	Ja, er spielt gern Hockey.

Read the interview above and try to work out the rules for using the verbs.

1) Underline all the verbs in the text.
2) Circle all the pronouns (eg ich/du/er/sie) and the names (eg Anna, Markus) that go with the verbs.
3) Work out which verb endings go with which pronouns.

a)	Ich	du	er/Markus	sie/Anna
	.....	.....	.....	.....
	.....	.....	.....	.....

In the chart above write in all the verbs that go with Ich, all the verbs that go with du etc.

b) Do you see any pattern for the endings under ich, the endings under du, the endings under er/Markus etc?

c) Now try to write what the rule is for the verb endings.

ich	du	er	sie
....	....	....	....

Phase 4.

Doireann:	Hallo, Jorg wie gehts?	
Jorg:	Gut, danke!	
D:	Wie alt ..... du?	(sein)
J:	Ich ..... 17.	(sein)
D:	Woher ..... du?	(kommen)
J:	Ich ..... aus Nurnberg.	(kommen)
D:	..... du Hobbys?	(haben)
J:	Ja, ich ..... gern Bucher.	(lesen)
D:	..... du gern Musik?	(horen)
J:	Ja und ich ..... Gitarre.	(spielen)
D:	..... du Geschwister?	(haben)
J:	Ja, eiene Bruder. Er heißt Markus.	
	Er ..... 15.	(sein)

Fill in the blanks in the above dialogue using the correct form of the verb given in brackets.

Final Questionnaire.

1.Tick which part of the lesson you liked best?

Part 1: Interviewing the Germans .....
Part 2: Discussion afterwards on what you found out. .....
Part 3: Reading the interview and working out the rules for the verb endings.....
Part 4: Writing up the report and preparing the role play interview with another person in the class. .....

2. Why did you like this part best? (Write a few sentences to explain)

.....
..

3. Which part of the lesson did you feel you learned most in?

Part 1 .....
Part 2 .....
Part 3 .....
Part 4 .....

Why do you think you learned most in this part?

.....

What did you learn?

.....

Class: 1st year. Ability: Mixed. Aids required: 5 Germans, 1 worksheet.

Lesson Phases.	Content.	Learning strategies.
Introduction: (Day 1: 1 class period) 1) Students are reminded of Learning Styles Inventory (rationale of which has been explained) and told they are to have a lesson devided into 4 parts based on LS theory with a short test after each part. 2) Students devided into 5 groups and told that each group will interview the 5 German exchange students present in the school.		1) Expository.
3) Groups prepare (in German) batteries of questions to ask. groupwork	3) Questions prepared are based on topics in course (e.g. age, hobbies, school etc.) Students are focussed on 1st + 2nd person singular verb forms.	3) Brainstorming, Some guidance from teacher mainly grammar in question preparation.
Phase 1: Concrete experience (Day 2: 1 class period) 1) The 5 German students are interviewed, one at a time by each group - such that by each group carries out 5 interviews, one with each German student.	1) Questions prepared above in German are used. When exhausted the students switch to English to ask anything of interest to them.	1) Group work. (minimal (interference from teacher).
2) Students write down information about each German. 3) Students then given a short verb test.	3) See test after phase 1 in attached samples of student work.	3) Individual written work.
Phase 2: Reflective Observation (Day 3: 1/4 of double class period) 1) Discussion/reflection on what students learned from the interviews (in English).	1) Some leading questions from teacher in order to direct discussion: *What did you learn about the German students? Anything unusual? *What did you find out about Germany? *Did meeting the people make you interested in the place? *What verbs were you using? In what way did you use them? (focus on verb form + pronom for 2nd person singular) *What verbs did the Germans use in answering? The same ones? How did they use them? (focus on verb form + pronom for 1st person singular).	1) Brainstorming. Large group discussion. Guided discovery when focussing on verbs used.
2) Short verb test given. Same format as for phase 1.	2) See test after phase 2 in attached samples of work.	2) Individual work.
Phase 3: Abstract Conceptualization (Day 3: 1/3 of double class). 1) Students given written script of an interview with 1st,2nd,3rd person singular verb forms in it.	1) See sheet for phase 3 in attached samples of student work. On it are instructions which guide students in their attempt to work out rules.	1) Guided discovery. Individual or pair work (Students choose how they want to work).
2) They study it + try to work out rules governing use of verbs. 3) Short verb test given. Same format as in other phases.	3) See test phase 3 in attached samples of work.	3) Individual written work.
Phase 4: Active Experimentation (Day 3: 1/3 of double class). 1) Students write up report on any one of the Germans they interviewed.	1) Here 3rd person singular is used.	1) Individual written work.
2) Short verb test given. Same format as in other phases.	2) See after phase 4 in attached samples of work.	2) Individual written work.
Conclusion: (Day 3: Final 10 minutes of double class) 1) Students asked to reflect on lesson. 2) Given questionnaire on how they felt about the lesson	2) See questionnaire in attached samples of student work.	1) Individual written work. 2) Individual written work.

	Result of pre-test (German verbs)	Results of tests LP 4				Result of post test	Rank in Class	Learning Style	Preferred phase of lesson	correlation between learning style + phase in which best score was achieved	correlation between learning style and preferred phase of lesson
		Phase 1	Phase 2	Phase 3	Phase 4						
1	1.5	6	6	7	6	4	22	div	(missing)	0	(missing)
2	6	9	7.5	9.5	9	Absent	8	ass	the test!!	v	0
3	4.5	10	5	5	8	6 5	10	ass	1	v	v
4	3	7	7	4	5	2	23	acc(1)div(2)	1	*	*
5	7	7	7	8	9	9	7	acc	1	0	v
6	5	3.5	3.5	4 5	4	8	21	Absent	1	Absent	Absent
7	8 5	9	9	7	9	9 5	1	div(1)acc/conv(2)	1	*	*
8	2	1.5	2	2.5	3	1	26	acc	1	0	v
9	6	8	7	8	9	9	6	acc	2	0	0
10	4	9	8	8	9	7 5	18	acc(1)conv(2)	1	*	*
11	4	Absent				2.5	20	div(1)acc(2)	Absent	*	*
12	Absent	4 5	8	5.5	4	4	12	acc	1	0	v
13	3	7.5	4.5	6 25	4	Absent	25	acc	1	v	v
14	Absent					5.5	19	div	Absent	Absent	Absent
15	Absent	4	3 5	7	4 5	5	17	acc	1	0	v
16	5 5	8 5	3 5	8	8	7	9	div(1)acc(2)	1	*	*
17	5 5	Absent				4 5	13	acc	Absent	Absent	Absent
18	7	Absent				8 5	11	acc	Absent	Absent	Absent
19	8	10	9	9	10	10	3	acc	1	0	v
20	5	1.5	7	7	8	9 5	16	acc	1	0	v
21	8	10	9.5	10	10	10	4	acc	1	0	v
22	7 5	9	7	6	10	4 5	14	acc	1	0	v
23	5	5 5	3	6.5	6	6	15	acc(1)div(2)	1	*	*
24	8	10	10	10	10	8 5	2	acc	1	0	v
25	Absent	4 5	missing	1 5	3	2	24	div(1)acc(2)	1	*	*
26	6	10	9	3 5	7 5	8	5	div	1	0	0
Total all scores	120	155	136	144	156	152		div=diverger ass=assimilator conv=convereger acc=accomodator		Positive correlation in 3 of 15 testable cases.	Positive correlation in 11 of 14 testable cases.
Mean	5.45	7.05	6.5	6 5	7 09	6.3					
								(1) indicates result of 1st answering questionnaire (2) indicates result after 2nd answering		* indicates that learning style is not accurately known	

Summary of Test Results and Correlation between Learning style and (a) highest score (b) preferred phase of lesson.

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