

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

185,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Influence of Congruent-Incongruent Teaching and Learning Style on Agricultural and Natural Resources Student Performance

Farzad Eskandari

Department of Agricultural Economics, Faculty of Agriculture, Kurdistan University, Sanandaj, Iran

Abstract

Based on Kolb's theory of learning and teaching a Post-test Group Design was applied to investigate the effect of congruent/ incongruent teaching and learning styles on students' performance at the faculties of Agriculture and Natural Resources at Kurdistan University, Iran in 2007. Using SPSS software descriptive statistics, descriptive statistics and T- test was employed to analyze the data. Results showed that: 1- the dominant learning styles among male and female students are Accommodator and Assimilator, respectively; 2- the main teaching style among teachers is Assimilator which corresponds to female students learning style; 3- Congruency between teachers' learning style and students' learning style has a positive significant effect on students' performance. The result could be used to improve the quality of teaching and learning at the faculties of Agriculture and Natural Resources at the University of Kurdistan, Iran.

Keywords: Higher education in agriculture, Learning-style, Teaching-style, Experiential learning, Student performance.

1. Introduction

An extensive amount of literature is available pertaining to learning styles and teaching styles and whether the match or mismatch between these two affects student performance. Of those studies which measured the effects of teaching approach on student achievement, mixed results have been reported. While a paucity of research exists in education which identifies a significant relationship between a teacher's teaching style and a student learning style and student performance [See for example 19, 16, 4, 10, 9, 3, 2 &8], there is some other that rejects this hypothesis [See for example, 7 & 18].

Although the influence of match and mismatch between teaching and learning style on student performance has received deep consideration in different countries and different parts of higher education system, the situation in Iran especially in Higher Agricultural Education System is not satisfying. Literature shows that most of the teachers in Iranian Higher Agricultural Education System (IHAES) pay less attention, if any, to their student learning style when defining their strategies to teaching. This is while most research shows a positive

relationship between congruent teaching- learning styles and student achievement. Many IHAES teachers assume if their students do not show a satisfying performance on exams, it is because of variables related to students not because of quality and style of teaching.

As with agricultural education the researcher could not find any practical research testing the relationship between learning- teaching style and student performance. Currently, research on relation between learning and teaching style and student performance in Iranian colleges of agriculture is very limited. If teachers in Iranian colleges of agriculture are to recognize and appreciate differences in students' learning style and meet the challenge set forth by Anderson and Adams [1], an expansion of this research area is essential. As a result, the purposes of this study were to identify the teaching styles of agricultural education instructors and the learning styles of their students in specific field areas, to determine if a match existed between the two, and to determine if relationships existed between student success and style match or mismatch.

Research questions studied were as follows:

1. What are the teaching style profiles of the agricultural education instructors as measured by the Kolb's Teaching Styles Inventory?
2. What are the learning style profiles of students in specified agricultural classes as measured by the Kolb's Learning Styles Inventory?
3. What is the percentage of match and mismatch of teaching styles and learning styles across classes of agricultural education instructors?
4. What is the relationship between students' success as indicated by final exam scores and a match between their learning styles and the teachers' teaching style?

2. Methods

To achieve the purpose of the study a post-test group quasi-experimental design was employed. The subjects of the study were 23 agricultural teachers, 2000 students and 23 courses from faculty of agriculture at the University of Kurdistan, Iran.

All teachers at the faculty were studied. But with the student population, stratified and systematic sampling techniques were applied resulting in selecting 300 students from different areas of study at the faculty. For each teacher one course was selected.

The Kolb's Learning Styles Inventory (1999) and the Kolb's Teaching Styles Inventory (1999) were used to obtain a profile of the teaching styles of the instructors and the learning styles of their students.

Descriptive statistics and T-test were employed to analyze the data.

3. Result

Data related to learning style of the student sample is presented in table 1.

variable	frequency	percentage
Learning style of the total sample		
Accommodator	105	35
Assimilator	80	26.7
Convergent	59	19.7
Divergent	56	18.6
Learning style of male students		
Accommodator	70	51.1
Assimilator	18	13.1
Convergent	33	24.1
Divergent	16	11.7
Learning style of female students		
Accommodator	35	21.5
Assimilator	62	38
Convergent	26	16
Divergent	40	24.5

Table 1. Learning style of the sample

According to the data in table 1, the dominant learning styles among male and female students are Accommodator and Assimilator, respectively. In other words, male students at the faculty of agriculture prefer to learn through real experience and by doing while females have a preference for learning through working on abstract ideas and theoretical issues.

Profile of teaching style preferences of teachers is shown in table 2.

Teaching style	Frequency	Percentage
Assimilator	9	39.1
Convergent	6	26.1
Divergent	6	26.1
Accommodator	2	8.7

Table 2. Teaching style of teachers

As data in table 2 shows, the dominant teaching style among teachers is Assimilator (39.1 percent of the participants) which is more congruent with learning styles of female students.

Descriptive statistics for congruent / incongruent teaching-learning style at the studied faculty is demonstrated in table 3.

	N (%)	Average final exam score	S.D.
congruent	119 (39.7)	15.70	2.72
incongruent	181 (60.3)	14.65	2.83

Table 3. Descriptive statistics for congruent/ incongruent teaching-learning style

Table 3 shows that for most students (60.3%) the teaching style of the teacher does not match their learning style. In other words for almost two third of students teachers at the faculty do not consider the learning style of them when planning for teaching strategies. Table also shows that the congruent group has a higher average final exam score (15.70) compared to incongruent group. To test whether this difference in final exam score is accidental or because of the match and mismatch between teachers teaching style and student learning style, T-test was applied.

Result considering whether matching or mismatching between teaching style of teacher and learning style of student influences student performance is exhibited in table 4.

T- student	d.f	Level of significance
2.54	298	0.001

Table 4. T-test result for congruent / incongruent teaching-learning style and student performance

Based on the data exhibited in table 4, congruency between teachers' learning style and students' learning style has a positive significant effect on students' performance. So, one can conclude that the higher average final exam score gained by congruent student group is due to the match between teachers teaching styles and students learning styles.

4. Conclusions and Implications

It can be concluded from this study that a positive relationship exists between congruent teaching-learning styles and student performance hence confirming the theory established by researchers that style match will produce higher performance by students as measured by final exam scores and course grades [14, 6, 11& 15]. The findings are congruent with research by Cano et al.[5]; Welborn, [19]; Cafferty, [2]; Daniel etal, [8]; Witkin et al.[20]; and Koppleman [12] that found a match between teacher's teaching style and student's learning style will cause in a more higher significant performance by learners.

Iranian agricultural educators can use the outcomes of this study to assess the importance that their teaching styles may have to the learning of their students. This study shows that student learning will be improved when the instructor's teaching style and the students' learning style match [13 &10]. Henson and Borthwick contended that "assessing learning styles provides to-

day's instructors with a new direction to take toward developing a more personalized form of instruction.

In this article we have discussed the significance of matching teaching and learning styles in IHAES and provided some empirical evidence to indicate that IHAES students exhibit distinctive learning style characteristics. To understand and respect individual's diverse learning styles, We suggest that teachers employ instruments to identify students' learning styles and provide diverse instructional strategies to address their differences, and that teachers plan lessons to match students' learning styles while at the same time encouraging students to diversify their learning style preferences. By doing this we can assist our students in becoming more effective learners

Like other research this study had some limitations. This study was limited to only one faculty at one university in Kurdistan province, Iran. This study should be replicated in other higher agricultural education institutions across the country with a larger population to gain a better picture of the relationship between congruent-incongruent learning and teaching style and student performance as well as to compare with the findings of this study and previous research.

Also, this study did not focus on extraneous variables. A similar study should be conducted which incorporates student characteristics, social variables, socioeconomic levels, and gender to determine if these variables significantly affect style match and student success.

5. References

- [1] Anderson, J.A., & Adams, M. 1992. Acknowledging the learning styles of diverse student populations: Implications for instructional design. In L. L. Border & N. Van Note Chism (Eds.), *New Directions for Teaching and Learning*, (pp. 19-33). San Francisco: Jossey-Bass Publishers, Inc.
- [2] Cafferty, J. 1980. *Learning styles*. Chicago, IL: National Association of Nursing Education. ERIC document, Service number: ED 2495533.
- [3] Campbell, B. W. 1989. *A study of the relationship between teachers' and students' learning styles and students' achievement in business communications*. Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.
- [4] Canfield, A. A., & Canfield, J. S. 1988. *Canfield Instructional Styles Inventory (ISI) Manual*. Los Angeles, CA: Western Psychological Services.
- [5] Cano, J. And Garton, B. L. 1994. *The Relationship Between Agriculture Preservice Teachers' Learning Styles and Performance in a Methods of Teaching Agriculture Course*. *Journal of Agricultural Education*. 35(2), PP. 6-10.
- [6] Carthey, J. H. 1993. *Relationships between learning styles and academic achievement and brain hemispheric dominance and academic performance in business and accounting courses*. Unpublished master's thesis, Winona State University, Minnesota.
- [7] Cupkie, L. 1980. *The effects of similarity of instructor preferred teaching style and student preferred learning style on student achievement in selected courses in a metropolitan community college*. Unpublished doctoral dissertation, university of Missouri-Kansas city.
- [8] Danile, A., Rasmussenm C., Jackson, J. and Brenner, D. 1984. *Cognitive style as a predictor of achievement: multivariate analysis*. ERIC document, NO. ED248217.

- [9] Dyer, J. E. and Osborne, E.W. 1996. Effects of teaching approach on achievement of agricultural education students with varying learning style. *Journal of Agricultural Education*, 37(4), PP. 38-45.
- [10] Henson, K. T., & Borthwick, P. 1984. Matching styles: A historical look. *Theory Into Practice*, 23(1), 3-9
- [11] Kaplan, E. J., & Kies, D. A. 1993. Together: Teaching styles and learning styles improving college instruction. *College Student Journal*, 27(4), 509-13.
- [12] Koppleman, K. 1980. Relationship of cognitive style to teaching style. (Paper presented to the Midwest Educational Research Association). Toledo, OH. (ERIC Document Reproduction Service No. Ed 194 609)
- [13] Ladd, P. D. 1993. The learning and teaching styles of Tennessee secondary business education teachers. Unpublished doctoral dissertation, The University of Tennessee.
- [14] Matthews, D. B. 1995. An investigation of the learning styles of students at selected postsecondary and secondary institutions in South Carolina. *Research Bulletin*, 60, 1-151.
- [15] Miglietti, C. L. 1994. The relationship of teaching styles, expectations of classroom environments, and learning styles of adult students at a two-year college. Unpublished doctoral dissertation, Bowling Green State University, Ohio.
- [16] Miller, S. L. 1990. Effects of matching learning styles of students and instructors on students' perceptions of effective teaching behaviors in the clinical setting. Unpublished master's thesis, Bellarmine College, Louisville, KY.
- [17] Simon, J. R. 1987. The preferred learning styles of two-year college students and the preferred teaching styles of two-year college instructors. Doctoral dissertation, Ohio University.
- [18] Spoon, C. J. 1996. Impacts of student learning style and instructor teaching style on achievement of adult basic skills students. Doctoral Dissertation, GeorgiaStateUniversity.
- [19] Welborn, R. 1986. Influences of achievement among nontraditional adult health professional students. Paper presented at the "Teaching to Potential" Regional Conference on University Teaching. (ERIC Document Reproduction Service No. ED 279 258).
- [20] Witkin, H. A., Moore, C. A., Goodenough, D. R. & Cox, P. W. 1977: Field-dependent and field-independent cognitive styles and their educational implications. *Review of Educational Research*, 47(1), 1-64.