

Diversifying Student Groups Based on Learning Style: Results of Student Perceptions on Group Dynamics

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SCHOOL OF PHARMACY

Introduction

The transition from lecture-based, individual-based learning to more cooperative, group-based learning in classrooms across the pharmacy academy has been demonstrated gains several outcomes, including retention, student satisfaction and professionalism.¹⁻⁴ A number of grouping methods have been incorporated, some of the most utilized include random assignment, academic success, and previous experience. In a recent best practices document, Farland et al., mention using the results of personality or learning style inventories to construct teams but caution that it may be time-consuming and/or costly.⁵ However, gains in improved group dynamics using such alternative methods and comparing to randomization or academic achievement have not been explored in pharmacy education.

Purpose

The purpose of this study was to compare the perceived group dynamics of pharmacy students when team formation was based on diversified learning style groups as compared to randomization or grade point average (GPA).

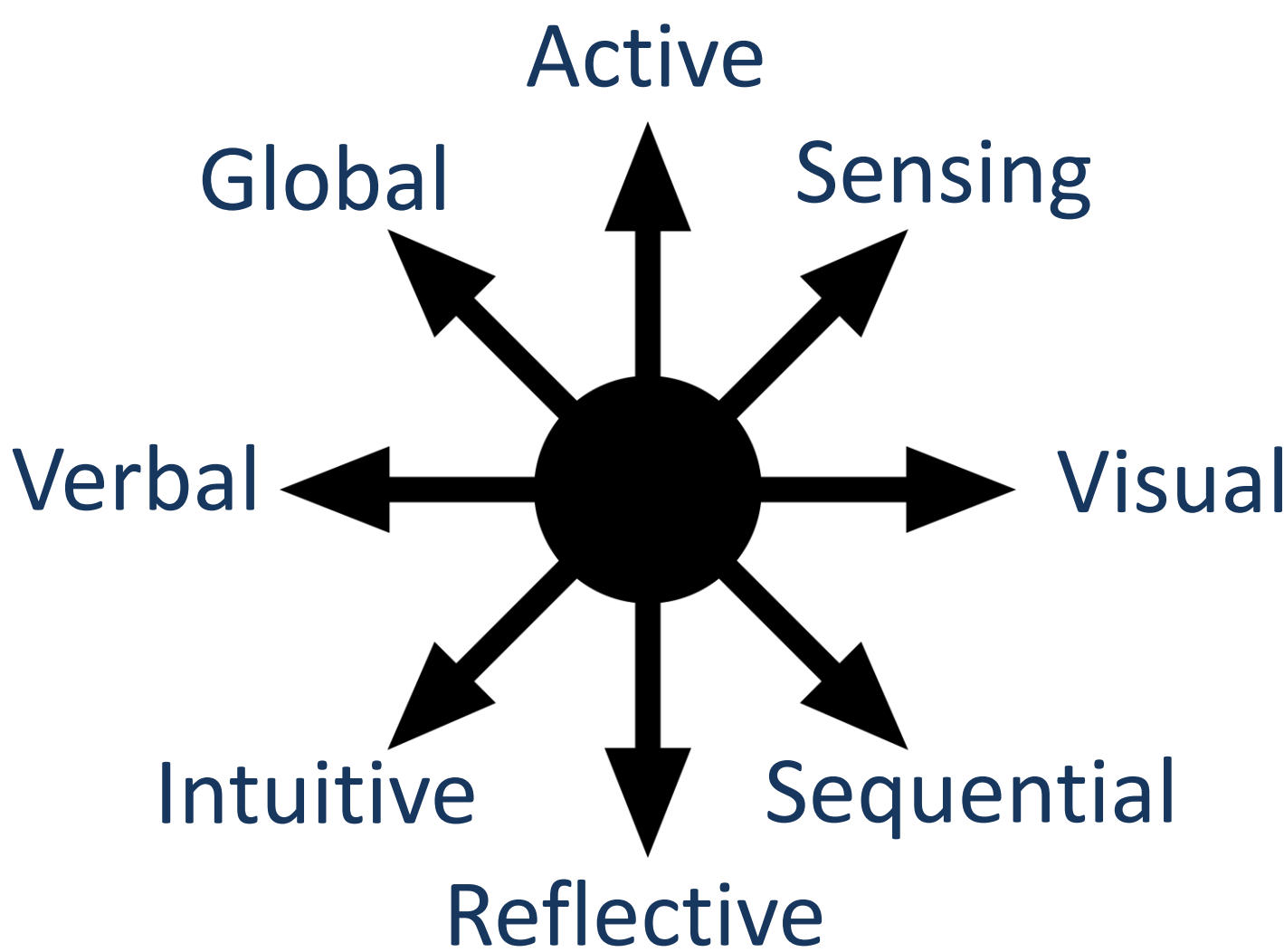


Figure 1: Four dimensions of learning style

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Methods

- This study was approved by The Marshall University Institutional Review Board.
- Investigators received permission from Felder et al. to use the Index of Learning Styles (ILS) questionnaire to assess students' preferred learning style based on 44 "a" or "b" questions.⁶ The questionnaire was adapted to Qualtrics (Provo, UT). Sample ILS items are depicted in Table 1.
- Of the pharmacy students surveyed, 74 first year pharmacy students (P1s) (95% response rate), 76 second year students (P2s) (96% response rate) and 70 third year pharmacy students (P3s) (90% response rate) completed the ILS questionnaire.
- Survey results were transformed using the algorithm provided by Felder et al. NRW then distributed students based on ILS results, first distributing students who preferred active learning amongst ten groups, then sensing learners. The remaining slots were filled based on deficiencies (if applicable) of verbal learners and global learners, controlling for group GPA. Student groupings were forwarded to Student Affairs to evaluate for student relationships, past student incongruences, etc.
- Students were then invited to answer survey questions based on the Global Team Process Questionnaire (GTPQ) before the beginning of the Spring 2017 semester to evaluate team dynamics of Fall 2016 and again following the Spring 2017 semester. Fall 2016 student groupings were based on randomization for P1s, and GPAs for P2s and P3s. Results were compared using paired sample t-tests and themes from open-ended questions were developed using Glaser's constant comparative method.

Table 1: Sample items from the ILS questionnaire

Active versus reflective

When I start a homework problem, I am more likely to:

- (a) start working on the solution immediately.
- (b) try to fully understand the problem first.

Sequential versus global

I learn:

- (a) at a fairly regular pace. If I study hard, I'll "get it."
- (b) In fits and starts. I'll be totally confused and then suddenly it all "clicks."

Results

We received 159 paired survey responses to the GTPQ, of which 60 were P1s (77% response rate), 58 were P2s (73% response rate) and 39 were P3s (50% response rate). Likert scale questions consisted of six options (1=strongly disagree or never and 6=strongly agree or always). P1s and P3s indicated significant increases in trust within their groups ($p=0.047$ and $p=0.011$, respectively), while P2 results demonstrated significant increases in support from fellow group members ($p=0.043$), as illustrated in Table 2. In addition, P3s also indicated significant improvements in team-based skill acquisition (Table 2). Open-ended question analysis supported Likert question results; however, the theme of improved teamwork was mentioned twice as often with the learning style grouping method even though this did not reach significance in our quantitative analysis for P1 or P2 students (Table 3).

Table 2: GTPQ Likert Scale Question Results

Team Dynamic	P1s (mean score)		P2s (mean score)		P3s (mean score)	
	Fall 2016	Spring 2017	Fall 2016	Spring 2017	Fall 2016	Spring 2017
Skill improvement	4.87	4.98	4.60	4.64	4.61	5.23*
Adequate time	4.75	4.90	4.62	4.81	4.17	4.26
High level of trust	4.65	5.23*	4.76	5.10	4.05	5.11*
Improved learning	4.82	4.95	4.51	4.50	4.08	4.26
Work distributed equally	4.80	4.70	4.56	4.48	3.89	3.54
Clear team roles	4.87	4.88	4.67	4.66	3.90	4.11
Communicated effectively	4.88	5.00	4.95	5.05	4.31	4.51
Supported by fellow members	5.00	5.23	5.05	5.47*	4.79	4.80

* Indicates $p<0.05$

Table 3: Open-ended question analysis

Team experiences	P1s (#)		P2s (#)		P3s (#)	
	Fall 2016	Spring 2017	Fall 2016	Spring 2017	Fall 2016	Spring 2017
Positive	Teamwork (8)	Teamwork (15)	Teamwork (7)	Teamwork (14)	Accountability (7)	Accountability (9)
Negative	Loss of focus (9)	Loss of focus (4)	Time efficiency (7)	Time efficiency (3)	Work distribution (8)	Work distribution (8)
Barriers	Knowledge (5)	Knowledge (3)	Rotations (7)	Rotations (2)	Attendance (5)	Attendance (5)

Conclusions

- Our results suggest that trust among group members, team-based skills and support from fellow group members significantly improve when learning style is used to create heterogeneous groups, controlling for GPA.
- Further investigation is warranted to see if other team dynamic components improve with larger sample sizes.

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