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ABSTRACT

This report summarizes the results of a research study conducted to assess the intellectual development of students in the QUANTA Learning Community at Daytona Beach Community College (DBCC) (Florida) in the 1989-90 academic year. QUANTA is a freshman interdisciplinary program with 75 students and three faculty. Three courses--English, psychology, and humanities--are integrated into a common theme each semester. The faculty teaching the courses are involved in collaborative teaching and also teach the full-year sequence. QUANTA, which emphasizes active and collaborative learning, includes a mixture of average-ability students, honor students, and older, non-traditional students. The emphasis of the program is on making connections between disciplines and with other members of the learning community. Seventy-one ratable essays were obtained at the beginning of the fall 1989 semester--their mean Measure of Intellectual Development (MID) score was 2.94. The 61 ratable essays at the end of the term had a mean MID score of 3.17. More than half of the QUANTA students showed a positive change of one-third position or more in their intellectual development. (NB)

A Report on the Intellectual Development of Students in the QUANTA Learning Community at Daytona Beach Community College 1989-1990

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September 1990

INTRODUCTION

This report summarizes the results of a research study to assess the intellectual development of students in the QUANTA Learning Community at Daytona Beach Community College in the 1989-90 academic year.

QUANTA is a freshman year interdisciplinary program which is currently in its seventh year of operation at DBCC. The faculty involved in QUANTA are currently conducting a study to assess student outcomes in the program. This initial attempt at assessment is using the Measure of Intellectual Development instrument to measure students' cognitive development as they progress through the QUANTA program. This research is being funded through Staff and Program Development at DBCC.

THE MEASURE OF INTELLECTUAL DEVELOPMENT (M.I.D.)

The Measure of Intellectual Development is based on the theory of cognitive development presented by William Perry, Jr. in his book Forms of Intellectual Development in the College Years (Perry, 1970, 1981). Perry conducted a series of longitudinal interviews with Harvard undergraduates during the late 1950's and 1960's. Analysis of these interviews revealed to him a sequential pattern of intellectual development in students, from a rather dualistic and authority centered view of the world and knowledge to a much more complex and relativistic perspective. Because this pattern of intellectual development is representative of liberal learning in Western civilization and the more complex stages are sought after as ideals, the Perry scheme has been used extensively in assessment studies of college education. (Moore, 1988) A summary of the stages or "positions" of Perry's scheme is found in Fig. 1.

A number of paper-and-pencil assessment instruments have been developed based on Perry's scheme. One of these, the Measure of Intellectual Development, was developed by Lee Knefelkamp and Carol Widick at the University of Minnesota. It involves writing an essay in response to a stimulus question having to do with classroom learning, decision making, or career plans. (MacGregor, 1987) The essay is evaluated by trained raters through a content and style analysis to indicate the student's level of intellectual development. The Measure of Intellectual Development rates students according to the "Perry positions" 2-5. A summary of these positions and their characteristics is shown in Figure 2.

THE QUANTA LEARNING COMMUNITY

QUANTA is an interdisciplinary learning community of 75 students and three faculty at DBCC. Three courses, English, Psychology and Humanities, are integrated around a common theme each semester of the freshman year. The faculty teaching these three courses are involved in collaborative teaching. QUANTA includes a mixture of average ability students, honor students, and older, non-traditional students. The interaction of this heterogeneous group of students and faculty is an important component of the learning community.

The emphasis in Quanta is on making connections. The interdisciplinary format requires students to make connections between the disciplines, thus encouraging the ability to integrate and synthesize ideas. Making connections with one another is also stressed in the learning community. Students are encouraged to interact with each other and with their teachers. The role of the teachers is primarily to be facilitators of learning rather than authoritative dispensers of knowledge or transmitters of information. Learning experiences in QUANTA are designed to emphasize active and collaborative learning. Students cooperate with each other through group projects and discussions, experiencing diverse perspectives on issues and problems. The active interchange between students and teachers helps the students to develop independent thinking abilities and to take more responsibility for their own learning.

PROCEDURE

Students in the QUANTA Learning Community generally experience a much more complex learning environment than do students in traditional college classes. Our hypothesis is that participation in this collaborative, active learning environment will result in greater movement along the Perry scale of intellectual development than is usual in traditional classes.

To test this hypothesis, the Measure of Intellectual Development was administered to students in the QUANTA Learning Community on the second day of class of the Fall 1989 semester. Students wrote Essay A: Best Class. (See Figure 3) The M.I.D. was again administered to students on the last day of class of the Fall 1989 term. This time students wrote Essay AP: Ideal Learning Environment. (See Figure 3) A final essay was written during the last week of the Winter term, Essay Q: Learning About Learning. (See Figure 3) Essays were scored by two raters at the Center for the Study of Intellectual Development.* Scores were compared for each student from the beginning to the end of Fall term, and from the beginning of Fall term to the end of Winter term, to determine whether any change in position as measured by the M.I.D. had occurred.

RESULTS

Seventy-five students were enrolled in the QUANTA Learning Community in the Fall 1989 semester; 71 ratable essays were obtained. The mean M.I.D. score on these essays was 2.97. Sixty-four students took the M.I.D. at the end of the term, and 61 essays were ratable. The mean M.I.D. score on these essays was 3.17. The difference between beginning and end of term scores shows a mean change of .20. Fifty-three percent of these students showed a positive change of 1/3 position or more in their intellectual development.

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Forty-five students wrote the final M.I.D. essay at the end of the Winter term. Essays which were ratable at the beginning of Fall term and end of Winter term were obtained for 38 of the students. For this group, the mean M.I.D. score at the beginning of Fall term was 2.96; the mean M.I.D. score at the end of Fall term was 3.2; and the mean M.I.D. score at the end of Winter term was 3.42. The difference between beginning and end of year scores shows a mean change of .46 (see Figure 4). Seventy-six percent of these students showed a positive change of 1/3 position or more in their intellectual development, 50% showed a positive change of 2/3 position, and 10.5% showed a positive movement of one full position or more (see Figure 5).

DISCUSSION

A comparison of the M.I.D. score for QUANTA students with national norms established by Dr. William Moore (1988), as shown in Figure 7, indicates that QUANTA students show a greater movement along the Perry scale on intellectual development than do students in traditional college classes. In fact, the mean change of position for QUANTA students (.20) was greater in one semester than the mean change of position for students in the normative sample (.18) after four years of college. The mean score for QUANTA students at the end of their first semester in college, 3.17, is comparable to junior and senior level students at other colleges in terms of the intellectual meanings they are making out of their experiences. These results, along with the fact that the majority of QUANTA students experienced a change in position of .33 or greater, gives strong support for the effectiveness of the QUANTA Program in stimulating significant intellectual development in a short period of time.

QUANTA is unique among community colleges in the nation for running a learning community for a full year with the same faculty. The year-long assessment showed that students who remained in the QUANTA program and completed the testing sequence showed a similar amount of growth in the second semester as in the first. The total mean change for the year (.46) indicates that the average intellectual growth was almost half a position on the Perry scale. These results strongly support the importance of the second semester of the QUANTA program for increasing students' intellectual growth.

In summary, the results of this research support the hypothesis that participation in the QUANTA program with its collaborative, active learning environment promotes significant movement along the Perry scale of intellectual development. The research also shows that the M.I.D. scores for the QUANTA Learning Community compares favorably with other learning community programs throughout the nation. (see Figure 6)

FUTURE RESEARCH

Research with the M.I.D. is continuing this year with the 1990-91 group of QUANTA students in order to obtain a larger sample size. Students in traditional English, Psychology and Humanities classes are also being tested on the M.I.D. in order to obtain a control group at DBCC.

DBCC has the unique advantage of having a two-year learning community program, which allows the cognitive development of students to be studied over a long period of time. Therefore we are planning to continue the M.I.D. evaluation this year with students who complete the second year interdisciplinary program.

The assessment of students' intellectual development while in the QUANTA program is just one part of a larger research study to evaluate the effectiveness of the program. Research is also being done to compare retention rates and achievement of QUANTA students and students in traditional classes, success in future academic work after leaving DBCC, and students' perceptions of their experience in the program.

Figure 1.

Perry's Scheme of Intellectual and Ethical Development

Dualism modified	Position 1	Authorities know, and if we work hard, read every word, and learn Right Answers, all will be well.
	Transition	But what about those Others I hear about? And different opinions? And Uncertainties? Some of our own Authorities disagree with each other or don't seem to know, and some give us problems instead of Answers.
	Position 2	True Authorities must be Right, the others are frauds. We remain Right. Others must be different and Wrong. Good Authorities give us problems so we can learn to find the Right Answer by our own independent thought.
	Transition	But even Good Authorities admit they don't know all the answers *yet*!
	Position 3	Then some uncertainties and different opinions are real and legitimate *temporarily*, even for Authorities. They're working on them to get to the Truth.
	Transition	But there are *so many* things they don't know the Answers to! And they won't for a long time.
	Position 4a	Where Authorities don't know the Right Answers, everyone has a right to his own opinion; no one is wrong!
	Transition *(and/or)*	But some of my friends ask me to support my opinions with facts and reasons.
Relativism discovered	Transition	Then what right have They to grade us? About what?
	Position 4b	In certain courses Authorities are not asking for the Right Answer; They want us to *think* about things in a certain way, *supporting* opinion with data. That's what they grade us on.
	Transition	But this "way" seems to *work* in most courses, and even outside them.
	Position 5	Then *all* thinking must be like this, even for Them. Everything is relative but not equally valid. You have to understand how each context works. Theories are not Truth but metaphors to interpret data with. You have to think about your thinking.
	Transition	But if everything is relative, am I relative too? How can I know I'm making the Right Choice?
Commitments in Relativism developed	Position 6	I see I'm going to have to make my own decisions in an uncertain world with no one to tell me I'm Right.
	Transition	I'm lost if I don't. When I decide on my career (or marriage or values) everything will straighten out.
	Position 7	Well, I've made my first Commitment!
	Transition	Why didn't that settle everything?
	Position 8	I've made several commitments. I've got to balance them—how many, how deep? How certain, how tentative?
	Transition	Things are getting contradictory. I can't make logical sense out of life's dilemmas.
	Position 9	This is how life will be. I must be wholehearted while tentative, fight for my values yet respect others, believe my deepest values right yet be ready to learn. I see that I shall be retracing this whole journey over and over—but, I hope, more wisely.

*From Perry, W. G., Jr., "Cognitive and Ethical Growth: The Making of Meaning." In A. Chickering and Associates, The Modern American College. San Francisco: Jossey-Bass, 1981, Chapter 3, pp. 76–116.

Figure 2.

Translation of Perry Model into Student-as-Learner Characteristics

Cue Categories	Position 2	Position 3	Position 4	Position 5
View of Knowledge and Learning	•focus on what to learn-content, facts •knowledge = collection of information	•focus on how to learn-processes, methods •"good" learning is practical, relevant	•focus on how to think •"New Truth"	•focus on how to think in context •rules of adequacy to judge knowledge
Role of Authority	•Teacher is source of right answers •Teacher is responsible for the learning	•Teacher is source of methods to right answers •Teacher assumes multiple roles	•Teacher is source of ways to think •Student either clings to authority(Adh.) or discounts expertise(Opp.)	•Teacher is source of expertise •Student seeks mutuality of learning
Role of Learners/Peers	•Learner responsibility is to reproduce information •Peers rarely mentioned other than notations of friends in class	•Learner responsibility is to work hard •Peers are interesting sources of diversity	•Learner responsibility is to think independently •Peers are legitimate sources of learning because everyone has a right to own opinion	•Learner responsibility to exercise the mind •Peers are truly legiti sources of learning
Language	•absolutes •dichotomies	•qualifiers •vague, unspecific terms (fuzzy)	•absolutes within multiplicity •dichotomies, but more elaborate than a 2	•language demonstrates analysis and synthesis •extensive self-proces
Multiples/Quantity	•simplistic lists •little or no recognition of multiples	•quantity terms •"correlating"	•multiplicity/diversity seen as part of learning process •quality begins to be as, and sometimes more important than,quantity	•integration of multiples •multiplicity/diversi is assumed
Atmosphere	•safe learning environment •structured, traditional formal process preferred	•variety of methods endorsed •less formal & traditional processes accepted	•may reject rote learning, memorization •non-traditional teaching is acceptable	•excited by ideas •search for synthesi endorsed
Role of Evaluation	•values clear, straightforward approach •test questions should be clear-cut	•concern with fairness •hard work = good grades	•may question teacher's right to evaluate student •learning to accept qualitative criteria as legitimate in evaluation	•separates evaluati of work from evalu of self •values qualitati feedback

Adapted from Knefelkamp, L. L., & Cornfeld, J. L. "Combining Student Stage and Style in the Design of Learning Environments: Using Holland Typologies and Perry Stages," 1979 (Available from CADI)

Figure 3.

MID Essay Questions

ESSAY A: Best Class

Describe the best class you've taken in high school or college. What made it positive for you? Feel free to go into as much detail as you think is necessary to give a clear idea of the class: for example, you might want to discuss areas such as the subject matter, class activities (readings films, etc.), what the teacher was like, the atmosphere of the class, grading procedures, etc. -- whatever you think was important. Please be as specific as possible, giving a complete description of your experiences and how you felt about it.

ESSAY AP: Ideal Learning Environment

Describe a class that yould represent the ideal learning environment for you. Please be as specific and concrete as possible about what this class yould include; we want you to go into as much detail as you think is necessary to give us a clear idea of this ideal class. For example, you might want to describe what the content or subject matter would be, the evaluation procedures that would be used, the demands on you as a student, what the teacher/s would be like, and so on. We want a complete description of what you would see as an ideal class.

ESSAY Q: Learning About Learning

Look back on your experiences in this class, and reflect on your discoveries about yourself as a learner. Please be as specific and concrete as possible about what stood out for you about this class: we want you to go into as much detail as you think is necessary to give us a clear idea of your learnings in this class. For example, you might want to discuss any of all of the following topics: the content/subject matter, the kinds of teachers and teaching you experienced, the classroom atmosphere, and/or the evaluation procedures that were used. Through these experiences, what have you learned about yourself as a learner?

FIGURE 4

MEASURE OF INTELLECTUAL DEVELOPMENT IN THE
QUANTA LEARNING COMMUNITY AT DAYTONA BEACH COMMUNITY COLLEGE

Data for all students with ratable essays

Beginning of Fall term mean	End of Fall term mean	Mean Change	End of Winter Term mean	Total Mean Change
2.97 (N=71)	3.17 (N=64)	.20	3.43 (N=43)	.46

Data for all students who completed testing sequence*

Beginning of Fall term mean	End of Fall term mean	Mean Change	End of Winter Term mean	Total Mean Change
2.96 (N=38)	3.2 (N=37)	.24	3.42 (N=38)	.46

* 45 students wrote the final essay. Of these, three were students who began QUANTA in the Winter term; two students had first essays which were unratable; two students had final essays were were unratable.

FIGURE 5

POSITION CHANGE ON THE MEASURE OF INTELLECTUAL DEVELOPMENT FOR STUDENTS IN THE QUANTA LEARNING COMMUNITY AT DAYTONA BEACH COMMUNITY COLLEGE

Data for all students with ratable essays for beginning and end of Fall Term: N = 61

-1.17	-.50	-.33/.34	0	+.33/.34	.66/.67	.83	1.00	1.17	1.33
1	1	13	14	20	5	2	3	1	1

Data for all students who completed the testing sequence: N=38

-.33	0	.17	.33/.34	.50	.66/.67	.83	1.00	1.17
1	7	1	9	1	14	1	3	1

Figure 6.

MEASURE OF INTELLECTUAL DEVELOPMENT
IN SELECTED LEARNING COMMUNITY PROGRAMS IN WASHINGTON STATE

1987-88 Academic Year

Program and Institution	Duration	Pre-mean	Post-mean	Positive Change*
TESC Coordinated Study: "Human Development"	3 quarters	2.96 (N-85)	3.34 (N-49)	57%
TESC Coordinated Study: "Matter and Motion"	3 quarters	2.97 (N-55)	3.27 (N-28)	63%
TESC Coordinated Study: "Art, Music and Literature"	3 quarters	3.04 (N-83)	3.38 (N-55)	58%
TESC Coordinated Studies: "Society & the Computer"	3 quarters	2.90 (N-81)	3.22 (N-56)	68%
North Seattle Community College Coordinated Study "Gods, Heroes & Humans"	1 quarter	2.98 (N-51)	3.43 (N-30)	73%
Seattle Central Community College Coordinated Study "Science Shakes the Foundations"	1 quarter	3.13 (N-23)	3.48 (N-23)	67%
Centralia Coll. Federated Programs "Wilderness" and "Bioethics"	1 quarter each	2.67 (N-8)	3.04 (N-12)	57%
Seattle U. Matteo Ricci Mixed group of HS Seniors and S.U. freshmen enrolled in course, "Composition, Language and Thought"	1 quarter	2.79 (N-21) 2.89 (N-25) 2.83 (N-25)	2.77 (N-49)	34%

* Indicates percent of sample showing +1/3 or more development.

Figure 7

MEASURE OF INTELLECTUAL DEVELOPMENT: NORMATIVE DATA*

Classification	N	Mean	Position 2	Tr*	Position 3	Tr	Position 4	Tr	Position 5	(%s)
Freshmen	1695	2.80	4.7	44.1	38.9	11.0	1.3			
Sophomores	367	2.88	1.9	42.0	37.6	15.3	2.7	0.5		
Juniors	358	2.91	2.5	33.0	47.2	15.4	1.4	0.3	0.3	
Seniors	337	2.98	1.8	29.7	46.9	15.4	4.7	1.5		
Age										
18	378	2.87	1.1	40.5	45.0	11.4	2.1			
19	229	2.81	1.3	48.9	38.9	7.9	3.1			
20	200	2.87	0.5	41.0	44.5	11.5	2.5			
21	116	2.91	0.9	35.3	46.6	15.5	1.7			
22+	99	2.90		43.4	41.4	10.1	2.0	2.0	1.0	
Gender										
Males	526	2.92	1.7	40.1	37.2	15.7	4.3	0.5	0.1	
Females	1287	2.89	1.0	37.2	47.0	11.8	2.4	0.3	0.1	

*Tr - Transition

* courtesy Bill Moore. Center for Applications of Developmental Instruction, 806 High Street, Farmville, VA 23901.

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