Research Guru
Online Journal of Multidisciplinary Subjects (ISSN : 2349-266X)
Volume-13, Issue-2, September-2019
Impact Factor:4.081
www.researchguru.net

Impact of Educational Intervention on Intelligence quotient, Focus factor, Decision making ability, Creative quotient, Academic achievement of 15 year old students

Dr. Shruti Marwaha
Research Scholar, Department of Anthropology
Panjab University, Chandigarh

Prof. A. K. Sinha
Professor, Department of Anthropology
Panjab University, Chandigarh

Dr. Ramesh Sahani
Asstt Professor, Department of Anthropology
Panjab University, Chandigarh

Corresponding Author: developmentresearch04@gmail.com (Dr. Shruti Marwaha)

Abstract: *Cognition describes the entire human thinking process. It is important to understand the cognitive processes of individual right from the childhood as these processes are the basis of the success in the future life. Cognitive development has a substantial influence in the educational exploration by a student. In this context, the present research study was carried on a sample of 481 students. Cognitive ability scale was used to assess the intelligence quotient, focus factor, decision making ability and creative quotient while academic marks were recorded as secondary data through schools. Multiple intelligence scale was used to assess the primary learning style. Intervention program was provided to the experimental group whereas control group was given no intervention. The intelligence quotient, focus factor, decision making ability, creative quotient and academic achievement increased dramatically after the successful consummation of intervention program. Hence, the present research study underlines the effectiveness of teaching learning process that corresponds to each student's natural learning style.*

Keywords: *Intelligence quotient, Focus factor, Decision making ability, Creative quotient, Academic achievement*

INTRODUCTION

Cognitive abilities predict academic achievement which has also been established by a studies conducted over the period of time. Philosophical approaches explore an explanation for casual aspects of creativity and examine the metaphysical and cosmological nature of the process of creation. Psychological theories have major concern with creative potential while social theories are concerned with an account of creative achievement. Creativity is the ability to bring into existence, to create, to produce something worth use through imaginative skill. Creativity is a process that results in a novel work accepted as useful and satisfying. Creativity can become a boon for innovative thinking and leads to expressiveness. High creative quotient paves the path to success. Murray (1959) defines creation as the output of a composition which is new and valuable in many contexts of the present discourse. New refers to as the entity being marketed by more than a certain degree of originality and valuable refers to intrinsically or extrinsically valuable and generative of valuable compositions in the near future. Bowers (1969) has described creativity as the spark that ignites new ideas. Marjoribanks (1976) had explored the relationship between academic achievement, creativity and intelligence and the findings indicated that for certain subjects areas creativity is related to academic achievement up to a threshold level of intelligence, but after a certain level creativity is not associated with further surge in academic achievements. Awasthy (1979) reported that science students were significantly better than arts students in fluency and flexibility areas of creativity. Snow (1986) found that the score of IQ test is used as a good predictor of students' academic achievement in schools, work performance, work achievement, income, and any other aspects affecting the success in life. Doyle (1988) found that in an educational era concerned with letters and numbers and the easy evaluation of skill sets, it is important to consider how domain-specific skills may critically harness domain-

general selective attention skills. To the extent that training and support for selective attention is valued, it may be leveraged as a force-multiplier across domains. In an age of accountability, this also puts pressure on the research community to develop valid and reliable measures of specific aspects of attention that will be sensitive to educational and intervention evaluation. Decision making is an art which enables an individual to take up right alternative and choice at the right time so as to enhance the output. Similar results have been found by Neisser et al. (1996). Daniel (1997) have confirmed that the correlation between IQ score and academic achievement varies depending on the policy used. Students who have high academic achievement also have high IQ scores. In a similar study by Deary, Whalley, Lemmon, Crawford and Starr (2000), it was observed that the people who had low intelligence were more likely to feel frustrated in the process of education and become aggressive and impulsive. An individual's abilities and capacities to learn can be partly uncovered by the use of verbal and non-verbal intelligence tests. Focus has a great impact on understanding and retention of tasks and events. Hopper and Hurry (2000) explained that teachers are responsible for helping all students to discover and develop their talents and strengths. He concluded that teachers should apply multiple intelligence theory in the way that they consider most appropriate for their students and school which will improve their academic performance. Geimer, Getz, Pochert and Pullam (2000) used multiple intelligences teaching strategies for increasing students achievement in language and arts. The sample included second, third and fifth grade students. The finding suggested that an increase in academic achievement was witnessed through the use of multiple intelligences. There was also significant improvement recorded in terms of homework completion, quality of homework and interest in the activities. Goodnough (2000) investigated the correlates of academic achievement among students of high school students. The results suggested that intelligence was significantly related with academic achievement. Muehlbauer (2001) carried out a study to find out the impact of an art infused multiple intelligences programme in achievement of mathematic. The result indicated that there was no significant effect of the art infused multiple intelligences programme on students' achievement in mathematics. Manner (2001) found that the multiple intelligences based teaching and learning works best to enhance the achievement among students. Dingledine (2003) asserted that high creativity among students catalyze their academic performance. Results further indicated that if teaching, assessment and social environment support creative thinking, the innate tendency among learners to achieve higher in academics can be enhanced. Creativity is fundamental to self-reliance although much research has been done in the field of creativity. Significant studies have endorsed creativity as a catalyst to success. Delis et al. (2007) suggested traditional exams that focus on examining students' memorizing mathematics and reading skills has a negative relationship with creativity thinking. Baer and Kaufman (2008) observed that arts and commerce students did not differ significantly in terms of creativity. The results of study conducted by Chandra and Azimmudin (2013) support that children with higher cognitive abilities excel in academics. The research study had also confirmed that the children with high IQ and higher cognitive abilities have better grasping power, retention, recall and higher understandability as compared to an average child. The result of the study revealed that the high IQ child will score better than the low IQ child. Low IQ child will most probably be a slow learner whereas a child with high IQ has a higher probability of being a fast learner. It is inevitable that students having high intelligence quotient would have better performance in academics. IQ provides a standardized method for measuring intellectual abilities and is widely used within education, employment and clinical practice. Newman and Newman (2017) found intellectual and cognitive development is significantly related to each other and that higher intelligence foster scholastic achievement.

METHODOLOGY

The research study was conducted on a sample of 481 students. Cognitive Ability Scale was used to assess the dynamic intelligence quotient (DIQ), focus factor (FF), decision making ability (DMA) and creative quotient (CQ). Multiple intelligence scale was used to assess the primary learning style. Besides, report cards were accessed to find academic test marks (ATM). Socio demographic data sheet, cognitive ability assessment and multiple intelligence scale were used to get the primary quantitative data for analysis.

Table 1: Distribution of sample (n=481)

Gender	N	Place	n	Group	
				Experimental	Control
Male	234	Pb	133	65	68
		Chd	101	57	44
Female	247	Pb	142	69	73
		Chd	105	59	46

Table 2: Procedure

Experimental Group	**Control Group**
TEST-1	
Intervention Quarter-1	No Intervention
TEST-2	
Intervention Quarter-2	No Intervention
TEST-3	
Intervention Quarter-3	No Intervention
TEST-4	
Intervention Quarter-4	No Intervention
TEST-5	

RESULTS

When IQ in all tests among males was compared, there was insignificant difference between IQ 1 of experiment and control group in Chandigarh as well as Punjab. The difference was also insignificant in case of IQ 2 in Chandigarh. Later in all subsequent tests, the difference came out to be statistically significant. Absolutely the same trend was witnessed in case of females. The mean value ranged from 91.47 to 122.9 in experiment group while it ranged from 93.91 to 99.56 in control group. The mean value of experiment group was lower than the control group in all the tests. Among females, the mean value ranged from 91.35 to 118.7 in experiment group while it ranged from 88.8 to 95.13 in control group. The mean value of experiment group was higher than the control group in all the tests. When the IQ in all tests of respondents in experiment group was compared gender wise, significant difference was found between males and females in case of experiment group, except in case of their IQ 3 in Punjab. However, significant difference was found in among their control group counterparts in Punjab on the contrary to Chandigarh where the difference was insignificant. Females had lower values as compared to males. The mean values among males ranged from 91.47 to 122.9 and among females ranged from 91.35 to 118.7. In control group, females had lower values as compared to males. The mean values among males ranged from 93.91 to 99.56 and among females ranged from 88.8 to 95.13. When comparison was made between males of Chandigarh and Punjab, insignificant difference was found between their IQ in experiment as well as control group in all the tests. Similarly, no significant difference was found among females except in case of IQ 2 between females of Chandigarh and Punjab in experiment group. The mean of IQ varied from 91.47 to 118.1 in Chandigarh while in Punjab it varied from 94.2 to 122.9. In case of females, the mean of IQ varied from 90.63 to 118.4 in Chandigarh while in Punjab it varied from 88.8 to 118.7.

Table 3: Comparison of Intelligence Quotient before and after intervention

Male								
Place	Chandigarh				Punjab			
Group	Ex		Co		Ex		Co	
IQ	Mean	SD	Mean	SD	Mean	SD	Mean	SD
IQ1	91.47*	15.11	93.92	14.20	94.46*	12.10	94.20	12.82
IQ2	98.88*	16.43	94.90	14.20	102.0*	13.07	97.18	12.82
IQ3	106.8*	17.88	95.90	14.27	110.3*	14.13	96.17	12.84
IQ4	113.1*	19.57	97.31	14.43	117.6*	14.72	97.68	13.05
IQ5	118.1*	20.54	98.93	14.65	122.9*	15.38	99.57	13.29
	Female							
IQ1	91.43*	12.02	90.88	12.71	91.35*	12.50	88.80	10.59
IQ2	91.85*	13.68	90.63	12.71	95.18*	13.83	89.78	10.59
IQ3	103.8*	15.73	92.83	12.73	103.4*	15.53	90.76	10.60
IQ4	112.6*	16.49	93.43	12.85	112.8*	16.96	91.29	10.81
IQ5	118.4*	17.18	95.13	13.17	118.7*	17.68	92.99	10.92

* Statistically significant differences

The mean value in Chandigarh increased from 91.48 to 118.1. In Punjab, the mean value rose from 94.47 to 122.9. Similarly, among females, significant increase was recorded. The mean value increased from 91.44 to 118.4 in experiment group of Chandigarh and it rose from 91.36 to 118.7 in Punjab.

Table 4: Comparison of Focus Factor before and after intervention

Male								
Place	Chandigarh				Punjab			
Group	Ex		Co		Ex		Co	
FF	Mean	SD	Mean	SD	Mean	SD	Mean	SD
FF1	47.71*	14.72	50.01	17.29	49.34*	13.69	49.06	12.90
FF2	51.57*	15.89	50.99	17.29	53.32*	14.77	50.04	12.90
FF3	55.73*	17.15	51.90	17.40	57.62*	15.94	51.00	12.90
FF4	58.93*	18.02	52.67	17.63	61.37*	16.57	51.81	13.14
FF5	61.55*	18.83	53.56	17.87	64.11*	17.29	52.79	13.31
	Female							
FF1	42.90*	13.59	44.96	13.52	44.73*	13.69	44.18	13.78
FF2	45.72*	14.72	45.94	13.52	47.61*	14.71	45.16	13.78
FF3	48.74*	16.00	46.89	13.53	50.69*	15.88	46.12	13.79
FF4	52.89*	17.04	47.20	13.68	55.36*	17.42	46.40	13.95
FF5	55.60*	17.84	48.05	13.91	58.27*	18.33	47.26	14.16

* Statistically significant differences

When FF in all tests among males was compared, there was significant difference between FF 3 and FF 4 of experiment and control group in Punjab along with FF 5 in both the areas. In case of females, there was significant difference between FF 4 of experiment and control group in Punjab along with FF 5 in both the areas. The mean value ranged from 47.71 to 64.11 in experiment group while it ranged from 49.05 to 53.55 in control group. The mean value of experiment group was lower than the control group in all the tests. Among females, the mean value ranged from 42.9 to 58.27 in experiment group while it ranged from 44.17 to 48.04 in control group. The mean value of experiment group was lower than the control group in all the tests. When the FF in all tests of

respondents in experiment group was compared gender wise, significant difference was found between males and females in case of experiment group in their FF 2 and FF 3 in Punjab and Chandigarh. However, significant difference was found in FF 4 of respondents only in Punjab. In case of their control group counterparts, the difference was significant in Punjab. Females had lower values as compared to males. The mean values among males ranged from 47.71 to 64.11 and among females ranged from 42.9 to 58.27. In control group, females had lower values as compared to males. The mean values among males ranged from 49.05 to 53.55 and among females ranged from 44.17 to 48.04. When the comparison was made between males of Chandigarh and Punjab in control as well as experiment group, no significant difference was found between their FF of the 5 tests in any of the groups. Same trend was followed in case of females. The mean of FF varied from 47.71 to 61.55 in Chandigarh while in Punjab it varied from 49.05 to 64.11. In case of females, the mean of FF varied from 42.9 to 55.6 in Chandigarh while in Punjab it varied from 44.17 to 58.27. The mean value in Chandigarh increased from 47.72 to 61.56. In Punjab, the mean value rose from 49.35 to 64.12. Similarly, among females, significant increase was recorded. The mean value increased from 42.91 to 55.61 in experiment group of Chandigarh and it rose from 44.74 to 58.28 in Punjab.

Table 5: Comparison of Decision Making Ability before and after intervention

Male								
Place	Chandigarh				Punjab			
Group	Ex		Co		Ex		Co	
DMA	Mean	SD	Mean	SD	Mean	SD	Mean	SD
DMA1	0.22*	0.08	0.24	0.10	0.23*	0.07	0.23	0.07
DMA2	0.36*	0.13	0.26	0.11	0.37*	0.12	0.25	0.08
DMA3	0.40*	0.14	0.27	0.11	0.42*	0.13	0.27	0.08
DMA4	0.43*	0.15	0.28	0.11	0.44*	0.14	0.27	0.08
DMA5	0.44*	0.16	0.28	0.11	0.46*	0.15	0.28	0.08
	Female							
DMA1	0.19*	0.07	0.21	0.07	0.20*	0.07	0.21	0.07
DMA2	0.32*	0.12	0.25	0.09	0.33*	0.12	0.25	0.09
DMA3	0.37*	0.13	0.27	0.10	0.39*	0.14	0.27	0.10
DMA4	0.40*	0.14	0.28	0.10	0.43*	0.15	0.28	0.10
DMA5	0.42*	0.15	0.28	0.10	0.45*	0.16	0.28	0.10

* Statistically significant differences

Among 15 year old respondents, there was insignificant difference between males of experiment and control group in DMA 1 in Punjab as well as Chandigarh. However, in case of their DMA 2, DMA 3, DMA 4 and DMA 5, the difference was statistically significant. Similarly among females except DMA 1, other cases recorded significant difference. The mean value ranged from 0.22 to 0.46 in experiment group while it ranged from 0.23 to 0.28 in control group. The mean value of experiment group was lower than the control group in all the tests. Among females, the mean value ranged from 0.19 to 0.45 in experiment group while it ranged from 0.2 to 0.28 in control group. The mean value of experiment group was lower than the control group in all the tests. When the DMA of respondents in experiment group was compared gender wise, significant difference was found in test 1 in Chandigarh as well as Punjab while in all other cases, insignificant difference was recorded. When comparison was made between males and females of in control group in both the places, no significant difference was found in any of the groups. Females had lower values as compared to males. The mean values among males ranged from 0.22 to 0.46 and among females ranged from 0.19 to 0.45. In control group, females had lower values as compared to males. The mean values among males ranged from 0.23 to 0.28 and among females ranged from 0.2 to 0.28. When comparison was made between males of Chandigarh and Punjab in

control as well as experiment group, no significant difference was found between their DMA of the 5 tests in any of the groups. Same trend was followed in case of females. The mean of DMA varied from 0.22 to 0.44 in Chandigarh while in Punjab it varied from 0.23 to 0.46. In case of females, the mean of DMA varied from 0.19 to 0.42 in Chandigarh while in Punjab it varied from 0.2 to 0.45. The mean value in Chandigarh increased from 0.22 to 0.45. In Punjab, the mean value rose from 0.23 to 0.47. Similarly, among females, significant increase was recorded. The mean value increased from 0.2 to 0.42 in experiment group of Chandigarh and it rose from 0.21 to 0.45 in Punjab.

Table 6: Comparison of Creative Quotient before and after intervention

Male								
Place	Chandigarh				Punjab			
Group	Ex		Co		Ex		Co	
CQ	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CQ1	0.57*	0.07	0.40	0.05	0.56*	0.07	0.40	0.05
CQ2	0.69*	0.09	0.45	0.05	0.68*	0.08	0.45	0.06
CQ3	0.74*	0.10	0.48	0.05	0.72*	0.09	0.48	0.06
CQ4	0.78*	0.10	0.51	0.06	0.76*	0.09	0.51	0.06
CQ5	0.85*	0.11	0.56	0.06	0.84*	0.10	0.56	0.07
	Female							
CQ1	0.54*	0.07	0.39	0.05	0.55*	0.07	0.40	0.05
CQ2	0.66*	0.09	0.44	0.06	0.67*	0.08	0.45	0.05
CQ3	0.70*	0.09	0.47	0.06	0.71*	0.09	0.48	0.06
CQ4	0.74*	0.10	0.50	0.07	0.75*	0.09	0.51	0.06
CQ5	0.81*	0.11	0.55	0.07	0.82*	0.10	0.56	0.07

* Statistically significant differences

Among males, there were significant differences found between the CQ of experiment and control group in Chandigarh as well as Punjab. The same trend was witnessed in case of females. The mean value ranged from 0.56 to 0.85 in experiment group while it ranged from 0.4 to 0.56 in control group. The mean value of experiment group was higher than the control group in all the tests. Among females, the mean value ranged from 0.54 to 0.82 in experiment group while it ranged from 0.39 to 0.55 in control group. The mean value of experiment group was higher than the control group in all the tests. When the CQ of respondents in experiment group was compared gender wise, significant differences were recorded between males and females of Chandigarh while in case of control group, the differences were insignificant. Females had lower values as compared to males. The mean values among males ranged from 0.56 to 0.85 and among females ranged from 0.54 to 0.82. In control group, females had lower values as compared to males. The mean values among males ranged from 0.4 to 0.56 and among females ranged from 0.39 to 0.55. When comparison was made between males of Chandigarh and Punjab, insignificant difference was found between their CQ in experiment as well as control group in all the tests. Similarly, no significant difference was found among females. The mean of CQ varied from 0.4 to 0.85 in Chandigarh while in Punjab it varied from 0.4 to 0.84. In case of females, the mean of CQ varied from 0.39 to 0.81 in Chandigarh while in Punjab it varied from 0.4 to 0.82. The mean value in Chandigarh increased from 0.57 to 0.86. In Punjab, the mean value rose from 0.56 to 0.84. Similarly, among females, significant increase was recorded. The mean value increased from 0.55 to 0.81 in experiment group of Chandigarh and it rose from 0.55 to 0.83 in Punjab.

Table 7: Comparison of marks before and after intervention

Male								
Place	Chandigarh				Punjab			
Group	Ex		Co		Ex		Co	
Marks	Mean	SD	Mean	SD	Mean	SD	Mean	SD
M1	55.01*	8.10	56.25	7.48	56.63*	6.41	56.46	6.98
M2	56.72*	9.54	52.80	9.19	58.61*	7.21	52.92	7.74
Female								
Marks	Mean	SD	Mean	SD	Mean	SD	Mean	SD
M1	55.36*	6.48	54.86	6.92	58.78*	6.72	53.69	5.69
M2	64.78*	8.42	58.42	8.29	69.62*	8.71	57.12	6.46

* Statistically significant differences

There were insignificant differences found between the M 1 in Chandigarh and Punjab among male respondents. But in case of M 2, there was significant difference. Among females, significant difference was recorded in M 1 and M 2 of respondents in Punjab along with their M 2 in Chandigarh. The mean value ranged from 55.01 to 58.61 in experiment group while it ranged from 52.8 to 56.46 in control group. The mean value of experiment group was higher than the control group in both the tests. Among females, the mean value ranged from 55.36 to 69.62 in experiment group while it ranged from 53.68 to 58.41 in control group. The mean value of experiment group was higher than the control group in both the tests. When the marks in both tests of respondents in experiment group were compared gender wise, significant difference was found between males and females in case of experiment group in their M 2. However, significant difference was also found in M 1 of control group in Punjab.Females had higher values as compared to males. The mean values among males ranged from 55.01 to 58.61 and among females ranged from 55.36 to 69.62. In control group, females had higher values as compared to males. The mean values among males ranged from 52.8 to 56.46 and among females ranged from 53.68 to 58.41. When comparison was made between males of Chandigarh and Punjab, insignificant difference was found between their marks in experiment as well as control group in both the tests. However, significant difference was found in marks of females in experiment group. The mean of marks varied from 52.8 to 56.72 in Chandigarh while in Punjab it varied from 52.92 to 58.61. In case of females, the mean of marks varied from 54.85 to 64.78 in Chandigarh while in Punjab it varied from 53.68 to 69.62. The mean value in Chandigarh increased from 55.01 to 56.72. In Punjab, the mean value rose from 56.63 to 58.61. Similarly, among females, significant increase was recorded. The mean value increased from 55.36 to 64.78 in experiment group of Chandigarh and it rose from 58.78 to 69.62 in Punjab.

CONCLUSION

There was significant rise in the IQ of 15 years old male respondents of experiment groups in Chandigarh and Punjab. The mean value in Chandigarh increased by 27 points. In Punjab, the mean value rose by 28 points. In contrast, insignificant changes were witnessed among their control group counterparts. Likewise, there was significant rise in the FF of male respondents of experiment groups in Chandigarh and Punjab. In contrast, insignificant changes were witnessed among their control group counterparts. There was significant rise in the DMA of male respondents of experiment groups in Chandigarh and Punjab while insignificant changes were witnessed among their control group counterparts. Significant rise in the CQ of male respondents of experiment groups in Chandigarh and Punjab was reported whereas insignificant changes were witnessed among their control group counterparts. Also, there was significant rise in the marks of male respondents of experiment groups whereas insignificant changes were witnessed among their control group counterparts.

REFERENCES

- Awasthy, M. (1979). A Study of Creativity, Intelligence, Scholastic Achievement and the factors of Socio-Economic Status. Unpublished M. Ed. Dissertation, Devi Ahilya University.

- Baer, J., & Kaufman, J. C. (2008). Gender differences in creativity. The Journal of Creative Behavior, 42(2), 75-105.
- Bowers, J. (1969). INTERACTIVE EFFECTS OF CREATIVITY AND IQ ON NINTH-GRADE ACHIEVEMENT. Journal of Educational Measurement, 6(3), 173-177.
- Chandra, R., & Azimmudin, S. (2013). The influence of gender on academic success of Lucknow City. Journal of Humanities & Social Sciences, 17(5), 9-14.
- Daniel, M. H. (1997). Intelligence testing: Status and trends. American Psychologist, 52(10), 1038.
- Deary, I. J., Whalley, L. J., Lemmon, H., Crawford, J. R., & Starr, J. M. (2000). The stability of individual differences in mental ability from childhood to old age: follow-up of the 1932 Scottish Mental Survey. Intelligence, 28(1), 49-55.
- Delis, D. C., Lansing, A., Houston, W. S., Wetter, S., Han, S. D., Jacobson, M., ... & Kramer, J. (2007). Creativity lost: The importance of testing higher-level executive functions in school-age children and adolescents. Journal of Psychoeducational Assessment, 25(1), 29-40.
- Dingledine, R. (2003). Creativity: Environment and Genetic factors.
- Doyle, W. (1988). Work in mathematics classes: The context of students' thinking during instruction. Educational psychologist, 23(2), 167-180.
- Geimer, M., Getz, J., Pochert, T., & Pullam, K. (2000). Improving Student Achievement in Language Arts through Implementation of Multiple Intelligences Strategies.
- Goodnough, K. (2001). Multiple intelligences theory: A framework for personalizing science curricula. School science and Mathematics, 101(4), 180-193.
- Hopper, B., & Hurry, P. (2000). Learning the MI way: The effects on students' learning of using the theory of multiple intelligences. Pastoral Care in Education, 18(4), 26-32.
- Manner, B. M. (2001). Learning styles and multiple intelligences in students. Journal of College Science Teaching, 30(6), 390.
- Marjoribanks, K. (1976). School attitudes, cognitive ability, and academic achievement. Journal of educational psychology, 68(6), 653.
- Muehlbauer, C. F. (2001). The effects of an arts-infused, multiple intelligences program on mathematical achievement.
- Murray, H. A. (1959). Vicissitudes of creativity.
- Neisser, U., Boodoo, G., Bouchard Jr, T. J., Boykin, A. W., Brody, N., Ceci, S. J., & Urbina, S. (1996). Intelligence: Knowns and unknowns. American psychologist, 51(2), 77.
- Newman, B. M., & Newman, P. R. (2017). Development through life: A psychosocial approach. Cengage Learning.
- Snow, R. E. (1986). Individual differences and the design of educational programs. American Psychologist, 41(10), 1029.